ERTY OF THE
PUBLIC LIBRARY

PULP & PAPER INDUSTRY

As our armed forces advance island after island in the South Pacific, on each of these stepping stones to Tokio, they encounter an enemy more dangerous than the treacherous Japs.

It is water-borne disease. In past wars this killer has caused more casualties than the most deadly weapons devised by man!

Today, chlorine and its compounds help to protect our fighting men against many forms of this menace. And for this important purpose, and other vital uses, Penn Salt supplies the army and navy with this important chemical.

In camps, during troop transportation, and in the field, chlorine sanitizes water for drinking and bathing. Its compounds serve bactericidal uses in field and base hospitals—in laundries, for bleaching and sanitizing purposes—in footbaths as a safeguard against common fungus infections.

These needs take a great deal of the Penn Salt output of chlorine and chlorine compounds. However, our concentration on this urgent wartime service has provided us with a fund of experience and increased facilities which will be turned to serving our peacetime customers even more satisfactorily when the war is won.

Penn Salt manufactures

Liquid Chlorine

for the Paper and Pulp Industry

Also

Caustic Soda • Corrosion-Proof Cements
Alum • Sodium Aluminate
Bleaching Powder • Anhydrous and
Aqua Ammonia • Acids • Perchloron*

*Trade-mark Reg. U. S. Pat. Off.

PENNSYLVANIA SALT
MANUFACTURING CO. OF WASHINGTON
Chemicals
TACOMA, WASHINGTON

Pacific Pulp & Paper Industry is published once a month, at 71 Columbia St., Seattle, Wash. Subscription: U. S., $4.00; Canada, $4.50; other countries, $5.00. Entered as second class matter May 20, 1927, at the Postoffice at Seattle, under the Act of March 3, 1879. Copyright, 1944, by Miller Freeman Publications.

Pacific PULP & PAPER Industry

The Management Journal Covering North America's Wood Pulp, Paper and Cellulose Industries

AUGUST • 1944

Vol. 18 No. 8

MILLER FREEMAN
President

LAWRENCE K. SMITH
Manager

ALBERT WILSON
Editor

KEMPER FREEMAN
Production Manager

MILLER FREEMAN, JR.
Circulation Manager

PUBLISHING OFFICE
71 Columbia St.
Seattle 4, Wash.
Tel. MAin 1626

EASTERN HEADQUARTERS
370 Lexington Ave.
New York 17, N. Y.

OTHER OFFICES
Chester A. Fee
Associate Editor
1220 S. W. Morrison St.
Portland 5, Ore.
Tel. AT. 9593-9594

Stuart Leete
121 Second St.
San Francisco 5, Calif.
Tel. GA. 5887

Arthur Ponsford
124 W. Fourth St.
Los Angeles 13, Calif.
Tel. MUtual 8196

Charles L. Shaw
675 W. Hastings St.
Vancouver, B. C.
Tel. Marine 1520

Contents Copyrighted 1944 by Miller Freeman Publications, Inc.

SUBSCRIPTION RATES

United States	$4.00
Canada	$4.50
Other Countries	$5.00
Single Copies	$ .35
Review Number	$1.00

Editorials

THE SIX P'S

TWO comparatively young industries of western United States—plywood and plastics—sat down together at the same conference table in Seattle a few weeks ago. It was the first meeting of its kind ever held.

The head of the plywood association made a speech in which he talked about the three P's. These he identified as Plywood, Plastics and Prefabrication. From the way in which the discussions developed, he might very well have added two more P's—Pulp and Paper.

A report on the meeting, published on page 18 in this issue, shows how Pulp and Paper actually were dominant themes of the sessions.

The speaker who talked of three P's might even have added a sixth one —Politics. We mean no special criticism of the Seattle conference in mentioning this, for Pulp and Paper people know only too well how politics seep into all kinds of conferences and conventions.

DEPENDENCE ON PULP AND PAPER

EITHER the plywood or the plastics industries could not have supported a conference such as was held in Seattle. Someone got the happy idea that they join forces. But there were critics in both camps, when it was over, who felt that it was mainly a conference for the benefit of the other fellow.

As it turned out, with the great stress put on the increasing dependence of the plywood industry for paper "overlays," and the lengthy discussion of pulp molding, paper laminating and cellulose plastics, as such, there seemed as much going on of interest to the pulp and paper industry as to either of the other groups.

There were very few pulp and paper industry representatives present among the 400 in attendance. Yet the plywood representatives made appeals to the paper industry for assistance and the plastics representatives discussed at length the importance of pulp and paper in most of their newest and latest developments.

The plywood industry openly conceded its dependence on the pulp and paper industry at the Seattle meeting. The plastics industry made a similar tacit admission.

For example, the most talked-of innovation in plywood are "overlays." The only "overlays" so far developed are made with impregnated papers. These are Kimberly-Clark's now famous "kimpreg," used by one North Carolina and two Washington state manufacturers, and Harbor Plywood Corp.'s "super-harborite." This fact, alone, indicates paper's importance to the industry. (These products still are not permitted for civilian uses.)

The plywood industry already has reached a stage where it is dependent on resin-impregnated paper and other plastic processes in order to continue producing an improved plywood. Thus "grain raise" and microscopic "checks" in plywood are prevented and the industry is able to develop edge sealers.

Meanwhile, development of purified cellulose is one of the most important and interesting trends today in the pulp and paper industry. Some chemists believe the future "plywood" will be made entirely with pulp and paper and resins—by papermakers' processes.

(For more on pulp and paper's role in plywood see pages 18 to 21).

WOOD vs. COTTON PULP

ONE of the most important groups of plastics are the cellulose derivatives. That's where wood pulp comes into the picture.

One acre of forest will produce more cellulose per annum than an acre of cotton or any other crop. That's primarily why wood cellulose is being increasingly used in plastics and the chemists are constantly seeking ways to make wood pulp of greater value to the plastics industries.

An outstanding pulp company—its name cannot be divulged for the present—believes it has developed a kind of pulp made from lower grades of wood and waste wood that will replace the high alpha wood pulp now being used by plastics manufacturers.

(Continued on next page.)

AN IMPORTANT NEW MARKET?

THE Seattle joint meeting, on which we have commented on the preceding page, repeatedly brought out the importance of pulp and paper to the plastics and plywood industries. But how important will plastics and plywood be to the pulp and paper industries? If, say, only five per cent of paper and five per cent of pulp went into plywood and plastics in the future, it would be a wholly new market that would effect tremendously the entire industry.

Already, many paper manufacturers have felt repercussions from the diversion of considerable pulp to rayon, smokeless powder and other uses than the manufacture of paper. Yet, percentagewise, that is still counted as only a slight diversion.

Many new factors are bound to bring about great stresses and strains on the pulp and paper industry after this war.

A number of outstanding pulp and paper companies —Kimberly-Clark, Marathon Corp., Riegel, St. Regis, Powell River Co., Weyerhaeuser Timber Co., Crown Zellerbach Corp., Howard Smith Mills in Canada, to mention only a few who already have taken definite steps in preparing for the future—have demonstrated by action that they are preparing for new fields to open up to pulp and paper.

Just one example of the many new uses of wood pulp is shown in—

OUR COVER PICTURE

THE field canteen, or water bottle, used by the soldier in this month's cover picture is made of ethyl cellulose (Dow Chemical Company's Ethocel) and is just one of the many remarkable new products made with wartime-improved cellulose plastics. It typifies the Cellulose Age.

At the Seattle plastics-plywood conference discussed in preceding paragraphs, one of the principal speakers mentioned that chemists working in behalf of the U. S. Army have developed many remarkable uses for ethyl cellulose and praised highly this most recently developed cellulose derivative. Some of these uses of ethyl cellulose cannot yet be revealed (See Page 19).

This soldier's water bottle had to pass exacting boiling, freezing and air pressure tests before it was accepted by the U. S. Army.

(The Dow Chemical Co. has been responsible for many applications now in use on battlefronts. Outstanding in development of Ethocel—the Dow material used in making the water bottle—has been the introduction of LT formulations, of material having high impact strength at low temperatures. This new material is outstanding by virtue of its retention of impact strength at sub-zero temperatures, the actual strength being improved by a factor of approximately four as compared with more familiar ethylcellulose materials.

(As important as the low temperature properties of this new material, is its resistance to distortion at elevated temperatures, because of its ability to produce relatively strain-free products.

(Ethocel has also been formulated in a casting plastic capable of being cast into easily constructed inexpensive molds.)

The canteen in our picture weighs even less than aluminum, and reveals other points of superiority which may well make it a "successor material" rather than a "substitute." For example: Odorless, tasteless, returns to original shape if contents freeze, uninjured if dropped on concrete from a soldier's height even though contents are frozen or boiling.

Ethyl cellulose is being used to make a number of major articles of military equipment. It differs chemically from other cellulosics which are cellulose esters in that it is a cellulose ether formed by treating cellulose with ethyl chloride and caustic alkali.

In contrast to the widely used cellulosic compounds —cellulose acetate and cellulose acetate butyrate—ethyl cellulose plastics can, in any one of dozens of formulas, produce parts which are satisfactory for use when tested from one extreme of temperature and humidity to its opposite. Ethyl cellulose plastics are substantially lighter in weight than the other cellulosics but have not yet attained the wide color range of the older compounds. They have the advantage over other cellulosic plastics in lower power factor, improved acid and alkali resistance, along with wider solubility in solvents. Ethyl cellulose also is readily molded around metal inserts and, because of its strength, does not have the tendency to break away from the metal at low temperatures.

Purified wood cellulose, nearly all of it coming from the Pacific Coast pulp industry, is used to a large extent as the raw material for the war-improved ethyl cellulose.

PULP SITUATION GETS NO BETTER--Mr. STEVENOT

F. G. STEVENOT, president of Puget Sound Pulp & Timber Co., points out that, despite slight increased domestic production, there was no relief from the shortage of wood pulp in the United States during the first half of 1944.

The increase of only 23,000 tons over the first half of 1943 was offset by a decrease in import balance.

Coupled with the pulp situation outlined by Mr. Stevenot, is the similarly critical waste paper problem. Despite intensive salvage drives, about half of paper production goes overseas. None of this had been salvaged until recently, when the armed forces began making an attempt to bring back some waste paper from North Africa and some of the captured Pacific islands remote from present military operations.

National pulp production totaled 4,630,000 tons in the first six months of 1944, in comparison wtih 4,547,000 tons in the first half of 1943, and 5,522,000 tons in the like period of 1942. These totals, plus import balances, provided new supply of 5,069,000 tons in the first six months of 1944, 5,045,000 tons in the 1943 period, and 5,939,000 tons in the first half of 1942.

The present critical situation and frantic efforts to get more production should impress upon the general public, the governments and the newspapers something they long overlooked—this is, the tremendous importance of our North American pulp industry. In other years—not so long ago—many of these pulp industries were fighting for survival against cheap labor competition abroad with no assistance from the government or the press.

SEVERAL OF INDUSTRY'S TOP WPB MEN RESIGN

Boon and Madden Leave; Whitney Heads Paperboard

● Resignations of several top men in the Paper and Paperboard Divisions of the Forest Products Bureau, U. S. War Production Board, were in the hands of Harold Boeschenstein, acting director of the Bureau, as this issue went to press.

James L. Madden, 34-year-old vice president of Hollingsworth & Whitney Co., followed Henry G. Boon, who was on leave as general superintendent of Kimberly-Clark Corp., out of the Paper Division. It was also rumored that their chief in WPB, Rex Hovey, director of the Paper Division, was hopeful of finding a successor so that he could resume his important duties as production manager for Oxford Paper Co.

Lt. (jg) Curtis Hutchins, U.S.N., has succeeded Jimmy Madden as deputy director of the Paper Division, in charge of pulpwood production. Mr. Hutchins, it was reported, was receiving his discharge from the navy. He had long been identified with the New England industry.

Mr. Hutchins and N. H. "Bud" Collett, former forest service employe who was Mr. Madden's chief assistant, were both expected to attend the second meeting of the West Coast pulpwood industry advisory committee, to be held August 28 at Room 953, White-Henry-Stuart Bldg., in Seattle.

The organization of this first industry advisory committee which the WPB lawyers have allowed to be organized outside of Washington, D. C., was reported in the June issue of Pacific PULP & PAPER INDUSTRY. Henry Champeaux, regional representative of the Paper Division on the Pacific Coast, is the government presiding officer. Mr. Hutchins will be government presiding officer of the Eastern pulpwood industry advisory committee, serving the remainder of the country, which will continue to meet as per regulations in the national capital.

Mr. Collett also is leaving the WPB, probably immediately after his western trip, to join West Virginia Pulp & Paper Co.

There were no immediate plans for a successor to Mr. Boon in the WPB, which will have the effect of increasing the work of Mr. Hovey, who has served for almost a year in a most difficult government post to the evident satisfaction of most of his former associates in the pulp and paper industry.

There have been a number of changes in the Paperboard Division:

Russell W. Whitney, on leave of absence from Hinde and Dausch Paper Co., Sandusky, Ohio, has succeeded G. G. Otto, late vice president of Alton Boxboard Co., Alton, Ill., who died July 4.

A. B. Huyssoon, of Continental Paper Co., Ridgefield Park, N. J., and Marc Shofer, of Iowa Fibrebox Co., Keokuk, Iowa, were appointed assistant directors of the Paperboard Division. Mr. Huyssoon succeeded Ralph Powers, who resigned to return to Robertson Paper Box Co., Montville, Conn., and Mr. Shofer succeeded Willard L. Davis, who also resigned.

The Paper Division which for more than a year has been occupying the rickety, squat Old Fisheries Building has now moved across the street to the Temporary D Building, Washington 25, which is on Independence Avenue. The Paperboard Division remains in Temporary S Building, next door to the Old Fisheries Bldg.

Jack Otto Dies Suddenly; Strain of WPB Post Took Toll

● It may be said of George Gerald "Jack" Otto, vice president and general manager of the Alton Box Board Co., Alton, Ill., that he died in the service of his country just as truly as any of the American boys giving up their lives in France or Guam.

Last fall Jack Otto was summoned to Washington by Donald Nelson, WPB director, and Harold Boeschenstein, head of the Forest Products Bureau of the WPB, to head the newly formed Paperboard Division of that Bureau.

Mr. Otto was not well at the time but, in sincere patriotic spirit, he accepted the assignment—no easy one. When a Pacific PULP & PAPER INDUSTRY representative visited the Paperboard Division offices in Temporary S building in Washington not long ago, he found Mr. Otto's associates praising him highly for the job he had done and at the same time expressing grave concern over his disregard for his personal health.

At the age of 49, he died of a heart attack in St. Louis on the 4th of July.

Mr. Otto is credited with having originated the nationwide waste paper collection drive, which probably saved the paperboard industry from collapse at a time when its products were in urgent demand by the army and navy for packaging.

He headed the WPB Paperboard Division at a time when that industry went under almost complete control of government, with its products under allocation because of army and navy requirements. It was a most difficult task that he handled.

In 1940, he originated the program of donating used paperboard felts for conversion into blankets for relief of war victims in Britain, Greece and Russia.

In 1933-5 he was a member of NRA's Paperboard Code Authority.

Despite the fact that he was so often in delicate positions as representing government to his industry, the National Paperboard Association (of which he was one of the founders in 1933) adopted a resolution in recent New York and Chicago meetings after his death, stating that:

"G. G. Otto was no ordinary member of our industry. His intelligence, uprightness, forcefulness, and tireless energy made him outstanding. . . . No industry problem was too difficult or too hopeless for him . . . no one was better able to enlist the cooperative effort of our industry."

Mr. Otto was born in Appleton, Wis., was graduated from Lawrence College there and was a captain of infantry in World War I. He was with Alton Box Board Co. since 1930.

Regional Stream Improvement Committees Formed; Program Starts with Lynchburg, Va., and Seattle Meetings

● Standing regional industry committees to work with the National Council for Stream Improvement of the pulp, paper and paperboard industries, are being organized throughout the United States.

One such committee was formed July 26 at Lynchburg, Va., for Virginia, North Carolina, Tennessee and West Virginia, with twelve companies represented. Hugh Camp of Chesapeake-Camp Corp., was elected chairman, and Fred Doutt of Champion Paper & Fibre Co., was chosen vice chairman.

A similar meeting was set for Aug. 24 at the Olympic Hotel, Seattle, at which all Washington and Oregon mills contributing to the national fund were to be represented. Dr. Harry W. Gehm, technical advisor for the National Council for Stream Improvement, was to attend after spending Aug. 21-23 visiting mills in the Columbia River and Puget Sound area and surveying their problems.

The purpose of these regional meetings, according to Russell L. Winget, executive secretary of the National Council, is to appraise waste disposal and utilization problems in each region and to determine the nature and direction of current research.

In the state of Washington a $300,000 to $500,000 five-year research program was undertaken this year at the University of Washington, financed by the mills. Plans to coordinate this program with the national program and to exchange findings, etc., will be discussed at the Seattle meeting.

On the next day, August 25, Dr. Gehm was scheduled to meet with the University of Washington staff which is carrying out the research program outlined in our January issue. The participating mills' technical committee—W. B. Barber, Crown Zellerbach Corp.; R. S. Hatch, Weyerhaeuser Timber Co., and R. Brown, Rayonier Incorporated, and Erik Ekholm, Puget Sound Pulp & Timber Co.—which cooperates in the University studies, were to attend this meeting.

F. H. Youngman, vice president, Crown Zellerbach Corp., is western represetnative for the National Council, greeted Dr. Gehm in Portland, Ore. L. S. Burdon, general manager, Soundview Pulp Co., is chairman of the Washington state industry committee which executed the agreement with the University of Washington for probably the most important research program ever undertaken in studying mill effluent uses and disposal.

U. S.-SWEDEN PULP PACT TO CURTAIL GERMANY Is Revealed--And It Raises Some $64 Questions

* * * *

NAM Charges State Dept. Makes Secret Agreements F. A. Fernstrom Clarifies His Statements on Sweden

ON the next page we publish a letter from Secretary of State Cordell Hull to the Hon. Fred Norman, congressman from the State of Washington, which reveals that Sweden's shipments of pulp to Germany are curtailed by agreement with the United States.

This information was obtained by Mr. Norman from the Secretary of State as the result of inquiries made by Pacific PULP & PAPER INDUSTRY. The inquiries were made because this magazine felt the North American pulp and paper industry has a right to know anything that is being done in Washington or Ottawa that will affect the North American industry's future prosperity—providing such information does not imperil the successful prosecution of the war.

The North American industry quite naturally is going to be curious about this agreement. What persuasion did the United States government use to obtain such a promise from Sweden?

It is no secret that the Swedes are very much interested in selling pulp to the United States paper industry after the war. Swedish imports will compete again with pulp produced in the United States and Canada.

It may very will be that the United States needed to make no specific promises in return for the Swedish promise to limit pulp shipments to Germany. The Swedes know who is winning the war and they know it should pay dividends to play ball with the winning side.

F. O. FERNSTROM, President, Fernstrom Paper Mills, Pomona, Calif., and Western Director of the Swedish Chamber of Commerce of U.S.A.

Was it enough—as Mr. Hull states—to hold the threat of "blacklisting" over the head of the Swedish pulp sales companies?

Swedish Pulp This Winter?

● We know that the Swedes hope to import pulp to the United States this winter, but would the "blacklist" of some Swedish firms, which has been published in the press, still be in effect when that time comes?

Mr. Hull's letter to Mr. Norman states:

"By agreement with this Government, a ceiling on Swedish exports of pulp to Germany has been established by the Swedish Government. Swedish exporters are not included in the Proclaimed List of Certain Blocked Nationals solely because of exports to Germany provided such exports are within the quotas established by the aforementioned agreement. Exporters who exceed such quotas or otherwise give undue aid or comfort to the enemy are listed . . . the representatives of this Government in Sweden are vigilant in their efforts to obtain scrupulous observance of the agreement."

In the meantime there have been persistent rumors that the U. S. State Department is preparing to make an agreement with Sweden regarding importation of pulp after the war.

We are informed by F. O. Fernstrom, president of the Fernstrom Paper Mills, Pomona, Calif., and member of the board of directors of the Swedish Chamber of Commerce of the United States, that we erroneously quoted him last month as saying the United States is preparing to make an agreement with Sweden for the importation of 1,250,000 tons of pulp annually from that country.

What Mr. Fernstrom said, according to his letter, is that Sweden is prepared to ship "the tonnage that they had shipped here in prewar years" and that "Washington would perhaps keep some sort of control over shipments and allocate pulp coming in from Sweden."

"I have no way of knowing if an agreement has been reached between Sweden and our government," he said.

Mr. Fernstrom's Statement

● We are very glad to publish Mr. Fernstrom's statement. He is one of the outstanding men in the entire North American industry and very definitely in a position to be well informed on future pulp markets.

We regard his opinions so highly that we feel that his entire letter should be published in our columns. It contains some interesting observations. Some others may not always see eye to eye with Mr. Fernstrom in his interpretation of events and conditions, but everyone respects his views. His letter follows:

"The Editor,
Pacific PULP & PAPER INDUSTRY,
71 Columbia St.,
Seattle 4, Wash.

"As per our telephone conversation of today, I wish to correct cer-

NO AGREEMENT — YET

Just as this issue was going to press Acting Secretary Stettinius informed Rep. Fred Norman (R. Wash.) that he is *not aware* of any agreement with Sweden for importation of pulp from Sweden into the United States. Whether the State Department is considering such an agreement was not mentioned.

He declared the amount of pulp being sent from Sweden to Germany under agreement with the United States is confidential.

Pacific PULP & PAPER INDUSTRY wishes to express its appreciation to Mr. Norman for making these inquiries to the State Department and for obtaining for us the information which provides the basis for much of this article.

Mr. Norman is himself greatly interested in this matter because of the thousands of his constituents who are employes of six important pulp and paper mills in Southwest Washington and whose future livelihood depend to a great extent on the matters discussed in this article.

tain statements made in your July issue in reference to the talk I made at the Papermakers and Associates of Southern California June meeting.

"In the first paragraph you state, 'The U. S. State Department is preparing to make an agreement with Sweden for the importation of 1,250,000 tons of pulp annually from that country by the United States, according to F. O. Fernstrom, president of the Fernstrom Paper Mills, Pomona, California.' The correct statement I made was that I had information that Sweden would be prepared to ship to the United States the tonnage that they had shipped here in pre-war years. If, for instance, Sweden in 1938 shipped, let us say, 1,250,000 or 1,000,000, which is more likely to be correct, tons of wood pulp, Sweden was evidently prepared to ship into

ADDRESS OFFICIAL COMMUNICATIONS TO
THE SECRETARY OF STATE
WASHINGTON, D. C.

DEPARTMENT OF STATE
WASHINGTON

July 5, 1944

In reply refer to
WT

My dear Mr. Norman:

Acknowledgment is made of the receipt of your communication of June 26, 1944, requesting that the Department suggest a suitable reply to a letter of June 21 addressed to your office by Mr. Albert Wilson, editor of Pacific Pulp & Paper Industry. The letter is returned herewith.

By agreement with this Government, a ceiling on Swedish exports of pulp to Germany has been established by the Swedish Government. Swedish exporters are not included in the Proclaimed List of Certain Blocked Nationals solely because of exports to Germany provided such exports are within the quotas established by the afore-mentioned agreement. Exporters who exceed such quotas or otherwise give undue aid or comfort to the enemy are listed. You may ssure Mr. Wilson that the representatives of this Government in Sweden are vigilant in their efforts to obtain scrupulous observance of the agreement.

Sincerely yours,

Cordell Hull

Enclosure:
From Mr. Albert
Wilson, June 21,
1944.

The Honorable

Fred Norman,

House of Representatives.

this country the same volume to assist in relieving the wood pulp shortage to the extent of what they had shipped in past years before the war; when shipping facilities are again resumed. Of course, I have no way of knowing if an agreement has been reached between Sweden and our government in Washington.

"What I wanted to tell was that, in my opinion, Washington would perhaps keep some sort of control over shipments and allocate pulp coming in from Sweden the same as they are doing now with shipments from Canada. That is still my opinion, at least for a year or so after the war in Europe has come to an end and until the pulp situation has eased. I cannot conceive that any consumer of pulp can buy large quantities from Sweden without our government having some hand in it to control the even distribution of all pulp that is available.

"In the third column where you state, 'Mr. Fernstrom, in his talk, pointed out that many people in the industry are thinking that when the war is over great quantities of pulp will be shipped over here. He joined with others who have expressed the view that expanded markets will take care of the North American pulp as well as the imports.'

"I well remember at the time I made the speech that I stated that cellulose will probably be used for many other purposes than paper and board, plastics for instance. Also, I stated that demands for all kinds of paper and board will probably be greater in years to come and inventories at present are at lowest level. It is to be expected that consumption of paper and board will be much greater in years to come and it is safe to state that the pulp industry should not feel overly concerned about the importation of pulp from Sweden because I feel that the non-integrated paper mills in America can well absorb the pulp manufactured in Canada, plus the imports of pulp from Sweden.

"I would also correct your statement relative to 'dumping' of pulp. I do not believe that Sweden 'dumped' pulp in America at low prices. The law of supply and demand has always set the prices for any commodity and also bear in mind that consumers of great quantities of pulp play one producer against the other to obtain the lowest price possible. That is probably the biggest factor why we have had such low prices on pulp in the prewar years. Your statement that Sweden 'dumped' their pulp at ruinous prices is not a statement founded upon all the factors. Swedish pulp producers are private enterprises just as are those in this country and must try to operate at a profit.

"In reference to your article about Goesta Hall, it is misleading to a certain extent. Mr. Hall is technical director and assistant to the managing director of sales for the Swedish Cellulose Co. of Sweden, the largest exporter of cellulose products in Sweden. Their affiliate in this country is the Cellulose Sales Corp. of 250 Park Ave., New York City, of which Mr. N. R. Johaneson is the president. Mr. Hall did not set up headquarters in New York upon his arrival here in America to solicit customers for Swedish cellulose pulp for the reason that they have had their office and headquarters at the above address for many years. I do not think that Mr. Hall came to solicit customers for their products, but came as a visiting industrialist with the Swedish Trade Commission. Sweden has always been a large customer of United States and the Trade Commission came to this country primarily to arrange for the purchase of American goods."

We plead guilty to have spoken bluntly when we described Mr. Goesta Hall, an eminent technician, as a "sales representative" who came to New York "to solicit customers." Our representative had the pleasure of meeting Mr. Hall in New York, where Mr. Hall made some speeches that were unlikely to put any serious crimp in Swedish sales of pulp. At a private dinner given for paper industry leaders who have bought much Swedish pulp and probably will buy it again, Mr. Hall stated that Sweden has a stockpile of 400,000 tons of sulphite and kraft pulp which it hopes to sell.

Sweden probably coud get a better price for that pulp in the United States market than in war-impoverished Europe. European countries, including Britain, are going to need a lot of other things more urgently than pulp after the war.

Goesta Hall Sails Home

● Mr. Hall, by the way, sailed on a return voyage to Sweden in late July from New Orleans. New Orleans is the shipping port of much of the greatly expanded kraft industry of this country. Mr. Hall arrived in the United States on the eastern coast last December. He knows much better than we do whether his seven months' stay in this country was "successful." He made many friends and even Mr. Fernstrom will concede that technical experts, such as he is, are often the best salesmen in the pulp and paper industry.

Leading paper companies in the east fully intend to again make sizeable purchases of Swedish pulp. However, at least one far-sighted papermaker tells us that he will always have Pacific Northwest pulp in his mills hereafter, even though he buys some Swedish pulp. It was the Pacific Northwest industry which came to the rescue of the paper industry when war cut off Swedish imports. That executive wants to see a strong thriving Pacific Northwest pulp industry in existence, if and when that situation ever develops again.

Sweden shipped 1,052,000 tons of pulp to the United States in 1936, 1,084,634 tons in 1937, 830,087 tons in 1938 and 957,879 tons in 1939. This country was Sweden's big customer—buying about one-third of Sweden's total exports.

There are some experts who doubt whether the Swedish industry, in view of strict forestry regulations and other developments, including new Swedish rayon industries, could ship over 1,000,000 tons to the United States annually in the postwar years. Even if it could, there are many who agree with Mr. Fernstrom that expanded paper uses and expanded uses of pulp for other purposes than paper will easily absorb all that Sweden, Canada and United States mills can produce for the United States market.

Any Pulp For Germany Is Too Much

● For the sake of the Allied cause and to keep down casualties in the war, it is just as important that Sweden's shipments of pulp to Germany be curtailed as the shipments of ball bearings, which have received much more publicity in the press. Probably all of Germany's smokeless powder, used to fire all medium and most large guns, is made from wood pulp. There are two basic raw materials for making smokeless powder—cotton linters and dissolving wood pulp. Germany can't get its hands on any cotton today. (Even in United States, more smokeless powder is made from wood pulp than cotton linters and as a result many paper companies have been unable to get pulp from the manufacturers who would like to be able to supply them.)

The lives of American boys in Europe are being saved in proportion to the amount of pulp which Sweden holds back from the Ger-

mans.

On the other hand, the North American pulp producers, already sacrificing years of sales campaigns in order to make smokeless powder for U. S. and Canada, know that the less pulp Sweden sends to Germany, the more it will have to ship to this country. Of course, none is complaining — these are just hard facts brought about by war. Our producers are willing to say even a little pulp for Germany is too much!

Mr. Hull does not reveal the extent to which Swedish pulp exports to Germany are limited. In pre-war years, Germany was Sweden's fifth customer — ranking after U. S., Britain, France and Italy. In one year it ranked behind Japan. Germany bought only about one-tenth as much pulp from Sweden as did the United States. In 1937, Germany imported 107,188 tons of Swedish pulp; in 1938, 76,994, and in 1939, 82,325. But with the U. S. and Britain cut off after 1939, much more pulp probably went to Germany.

In our civilized world, most business men will agree that the instrument of a trade agreement, per se, is nothing to cry "wolf" about. If we really mean to prevent future wars, bigger and better trade agreements will be the order of the day.

How much better it is to sit down together and reach some sensible agreements, instead of sitting behind national barriers, having no contact whatever with the competitor, and fighting each other with price slashes and other cutthroat weapons?

But what is contained in these agreements is important. The North American pulp and paper industries want to know what is contemplated in Washington or Ottawa that may determine their very survival. They want "open covenants, openly arrived at." They want to be consulted — before any agreements are made. That seems to be a fair deal, since any agreements may mean "life or death" to them.

As a result of statements made in this magazine, we have been informed that minor officials in the State Department have merely made verbal denials of any Swedish pulp negotiations.

NAM Exposes Secret Pacts

● Meanwhile here is a recent news release from the press service of the National Association of Manufacturers:

"WASHINGTON, July 2nd — Existence of secret trade agreements between the United States and Great Britain—established for war purposes but which may point to a trend proposed for postwar foreign trade—has been admitted by government officials, it was revealed today in the NAM News, weekly publication of the National Association of Manufacturers.

"These agreements, according to officials, have been made by the Combined Production and Resources Board, composed of one representative each from the United States, Great Britain and Canada. This board was created on June 9, 1942, by President Roosevelt and Prime Minister Churchill, and, according to the Congressional Directory, its purpose is to 'complete the organization needed for the most effective use of the combined resources of the United States and the United Kingdom for the prosecution of the war.'

"The Board has created export zones for Britain, Canada, other British possessions and the United States for several industries. What zones and what industries are affected are said to be one of Washington's most cherished secrets."

We already know something of the power of this board in directing the pulp industries of U. S. and Canada.

And if there are secret agreements with Britain, why not with other countries?

One of our editors had many years of close experience with the British government in London. One of the observations he made during those years as a reporter abroad was that the British Board of Trade has true representation in the British Cabinet and that the British Cabinet continually funnels information of value on world market situations and developments to the industries of Britain. Nothing to compare with this close team-work has ever existed in this country.

A step in this direction was taken recently in Washington with organization of a permanent Pulp and Paper Industry Council as an advisory body for the Department of Commerce, carrying out an idea long advocated by George H. Mead, member of the War Labor Board and the paper industry's outstanding figure in Washington today.

Is it too much to hope for some sort of liaison with the State Department as well as the Department of Commerce?

Some Recent Trade Developments in Sweden

● Speaking at the spring conference of the Swedish forestry industry, a Mr. von Sneidern, Swedish pulp industry leader, said that sales openings for all sorts of pulp deteriorated during the year.

Viscose pulp has, owing to the war, lost its old market, and consequently many pulp mills have had to suspend operations after placing in stock all they could, he said, adding that it has been suggested that the mills should be kept going in order to give employment and meet peace requirements with full stocks.

Mr. von Sneidern emphasized the risks such a policy would involve and the limited extent to which it could be applied if the enterprises had to carry these risks themselves.

With reference to the "risks for Sweden" implicit in the creation of new mills in the countries which previously bought from Sweden, he took a comparatively optimistic view, and said that, owing to the high quality of the Swedish raw materials used, Swedish pulp should be able to meet any competition. More serious was the gradual wearing away of the resources of raw materials. There had been a second stocktaking in the Norrland provinces and in most parts of the province of Darlarne, and also in four provinces in Southern Sweden. This had proved that in the last 15 years the Norrland districts' resources had decreased by 40 million cubic metres, that is, 7 per cent.

The reduction was particularly heavy in resources of old and big trees. It appears, however, that there had been a counter-balancing increase in the growth of wood, and particularly the larger dimensions, in the southern parts of the country. The situation called for attention and well-planned measures. No substantial recovery for the sawmills and the cellulose mills could be expected in the near future.

In order to keep the export going, it might be necessary to make use of the results obtained by technical-scientific researches in the wood-refining industry, he said. The new and intense scientific research work aiming at creating finer strains of forest trees with an increased yield might improve conditions.

Sweden's westward shipments of pulp and paper this year under the safe-conducts have not yet had time to become very extensive, as only a few boats have left Sweden so far. Selling has been fairly brisk, however, and business has been done with several of the South American states who had not previously been buyers. Newsprint seems to be most in demand, but it is too early yet to say anything of the chances of completing deliveries, which will depend on whether transport licenses can be obtained. In any case, it seems as though Sweden may have to be prepared for a stoppage of shipments to some of the South American states, and that would, of course, considerably reduce the value of any sales contracts already made.

A Program to Educate Small Land Owners In Silviculture for the Sulphate Industry

By ELIS OLSSON
President and General Manager,
The Chesapeake Corporation of Virginia

THE West Point mill of The Chesapeake Corporation of Virginia is situated in the loblolly pine belt of Tidewater Virginia. It produces about 350 tons of board a day, using approximately 600 cords of wood. It has now been in operation for 27 years.

When the mill was first started, it was realized even in the days of seemingly inexhaustable supplies of timber that, though we had an adequate drawing territory, unless some form of forestry was practiced this supply might eventually become inadequate. At that time the mill began the practice of leaving seed trees on all the land that was cut over, and this has been continued until the present time. During this period the company has tried out many other forms of silviculture including selective cutting and other forms of partial cuttings. The conclusion has just about been reached that this seed tree form of forestry practiced by the company when first started, is the one best adapted to our conditions.

Most of the timber in this section is a result of the abandonment of great areas of agriculture land following the war between the states. These are essentially even-age stands, and the company hopes to reproduce them as such, using early thinnings to hasten the time of financial maturity. The Chesapeake Corp. owns a good bit of timberland in fee simple, but not enough to meet the total wood requirements of the mill. From a half to two-thirds of the pulpwood comes from farm wood lots and other forms of small ownership, therefore, a great deal of emphasis must be placed on the forestry practices used on these private lands, so the company set up an intensive program to reach as many of the small owners as possible.

Six-Point Program

The work of educating and assisting small owners in forest culture will be divided into six phases: (1) movies (2) press releases (3) demonstration areas (4) work in the schools (5) timber marking services and (6) fire protection.

Before the war a representative of the company went to some country store every Saturday night and showed Kodachrome slides of good forestry practices. By holding meetings in country stores, you could get a chance to talk to people in familiar surroundings and get a great deal more discussion than if this was done in the school or some public hall. So far as possible, slides were shown of timber stands in that area that the people could recognize, and look over them later for themselves.

ELIS OLSSON, President of the Chesapeake Corp. of Virginia, West Point, Va., who has conducted a unique campaign in his state, encouraging small landowners to learn scientific methods of cultivating timber for profit.

Once a week a short article on forestry was released to the weekly newspapers of the counties in the drawing area. These were supplemented by a daily forestry forum on the largest radio station in the vicinity. This consisted of questions and answers on pertinent forestry topics. This program comes directly following the "Farm and Home Hour" and so reaches many of the people in the rural sections.

In each locality a demonstration area was set up adjoining the most heavily traveled highway in that community. Here cuttings were made to demonstrate good forestry practices. Some of these have picnic facilities to encourage people to stop and look.

Every two weeks a representative of the company holds a class in forestry in as many of the agricultural high schools as possible. The information given out in these classes is quite frequently carried home and put in practice on the farm, and also serves the purpose of making the future generation timber and forest conscious.

Since the mill started it has followed the practice of offering free marking service to any of the land owners selling pulpwood. This includes marking of seed trees and selection of trees to be removed in thinnage.

The Chesapeake Corp. has excellent forest fighting equipment including a tank truck, pumps, hose, back pumps, fire rakes and a well-trained fire fighting crew. The company policy has been to assist in the prevention and suppression of forest fires regardless of ownership of land. This has helped a great deal in keeping forest fires at a minimum.

The seed tree method of obtaining reproduction results in a lower percentage of undesirable hardwoods than any of the other silvicurtural forms. But even this is not entirely solving the problem. So the company called in as consulting forester one of the leading authorities on loblolly pine in the country: Professor H. H. Chapman, retired Harriman Professor of Forestry at the Yale School of Forestry. After hearing his recommendations an open forum of the management and foresters of all the pulp mills and wood using industries of this section, together with the state and federal foresters was held. After much discussion the agreement was reached that it would be a good idea to try some experimental work on burning over the woods after cutting in the early autumn just before seed fall. This serves the double purpose of killing the hardwoods and getting rid of the heavy duff to prepare a good seed bed for the pine. The seed trees are left about four to the acre and are protected from the fire

by clearing a ten foot circle around them.

This company is one of the first to use fire as a silvicultural tool in the management of loblolly pine. As soon as we get past the experimental stage, this burning service will probably be extended to the small land owners.

The forester at the present time is J. H. Johnson, graduate of Washington and Lee University, Virginia Polytechnic Institute and the Yale School of Forestry. We also have three men who spend their entire time marking timber for cutting.

Dr. Kress In Northwest

● Dr. Otto Kress, technical director of the Institute of Paper Chemistry, at Appleton, Wis., spent several days in the Northwest during July.

During his tour, Dr. Kress visited the Pulp Division, Weyerhaeuser Timber Co., Longview, Wash.; and the Camas, Wash., division of Crown Zellerbach Corp. In the latter city he devoted some time to the company's Central Technical Department.

SOME PERTINENT HISTORY

● Working out effective methods of encouraging small landowners to grow timber—by country store Saturday night meetings, articles in country newspapers, roadside demonstrations, etc.—has been one of the principal interests of Elis Olsson, president and general manager of The Chesapeake Corp. of Virginia.

He came to North America in 1906 from Karlskoga, Sweden — coming from a country which long ago learned the lessons of conservation and more complete use of natural resources, including especially timber resouces.

Educated as a chemical engineer, he first was employed in this country in a pulp mill at Mechanicsville, N. Y., and thereafter in Quebec. In 1918 he resigned as assistant superintendent of Brompton Pulp & Paper Co., East Angus, Quebec, to join in pioneering the sulphate industry in southern United States. Associated with others, he helped in founding The Chesapeake Corp. of Virginia at West Point, 40 miles east of Richmond. At the intersection of the Mattaponi, Pamunkey and York rivers, it has low water transportation costs and is one of the nearest sulphate mills to the New York market.

Mr. Olsson became manager of manufacturing at the end of the first year and by 1929 rose to the presidency.

John F. Ekberg, vice president and general superintendent, also was born and educated in Sweden. He received a degree as mechanical engineer at the University of Stockholm. He went to West Point in 1919 from Brompton Pulp & Paper Co.

W. C. Gouldman, vice president and secretary, has long been active in sales fields.

Other executives are: J. Scott Parrish, treasurer; Fred Kruse, board mill superintendent; Erik Zimmerman, pulp mill superintendent; Henry Vranian, chief chemist; M. S. Mayes, chief engineer; C. M. Bounds, master mechanic; James H. Johnson, forester; B. B. Walker, Jr., purchasing agent, and O. J. McSwain, traffic manager.

Products of Chesapeake Corp. are heavy kraft liner board for shipping containers, kraft specialties and some kraft pulp for market. It has one of the largest chemical recovery plants of its type in the country. Its daily capacity is 425 tons of pulp and 375 tons of kraft papers.

AN EXAMPLE OF THE ROADSIDE EDUCATIONAL SIGNS by which Chesapeake Corp. encourages small landowners to grow trees for profit. The sign says: "FOREST WINDOW" (a term adopted by the company for a view of a model stand) "Leave pines with burs in tops for seeding your cut-over land—The Chesapeake Corp., West Point, Va."

COAST TAPPI SETS DATES For Camas and Bellingham Dinners

● As has been its policy since the entry of United States in the war, the Pacific Section of TAPPI will hold only two dinner meetings during the forthcoming year. Time and place of meetings:

NOV. 14—CAMAS, WASH.

MARCH 20, 1945—BELLINGHAM, WASH.

This was decided at a meeting of the executive committee in Portland, Ore., July 23, presided over by Chairman Erik Ekholm and attended by Harold W. Bialkowsky, C. A. Enghouse, Z. A. Wise and R. M. True.

The Shibley award for the best technical paper by a mill employe again will be offered. Entries and completed papers must be in the hands of Mr. Bialkowsky (Pulp Div., Weyerhaeuser Timber Co., Everett, Wash.) at least 30 days before the meeting at which they are presented.

Another joint meeting with the Pacific Coast Division of the American Pulp & Paper Mill Superintendents Assn., is to be held in late May or early June, 1945. Papers presented there by mill men also will be eligible for the Shibley competition.

Mr. Bialkowsky and Mr. True were named to a committee to pass on applications for membership.

PUERTO RICO "DREAM" MILL IS STYMIED

SOME considerable publicity concerning a proposed paperboard industry in Puerto Rico—including a "dream" picture of a planned mill—recently drew some attention in United States and Canadian industry circles.

Pacific PULP & PAPER INDUSTRY made direct inquiries among responsible authorities in Puerto Rico and we find that the scarcity of material in Puerto Rico is going to make it very difficult for an industry to get under way there, producing either paper or paperboard.

The bulk of the material that the "dream" mill was going to use was cane bagass, but the sugar mills in Puerto Rico are very reluctant to permit the diversion of such material for paper manufacture. Up to now, the sugar mills have used this bagass very efficiently as a fuel, especially since the scarcity of coal fuel for the West Indies became acute.

Up to date, the Puerto Rico Development Co., which several months ago selected a site for a mill, has not been able to progress any further in the undertaking.

It looks very much like Puerto Rico will still be a good market for U. S. paper and paperboard industries.

NEWS OF *The Pulp and Paper Industry--*

15 Years Ago

Members of the Woodland Section of the Canadian Pulp and Paper Association visited the United States, from Montreal, in an automobile caravan from Aug. 4-10, 1929. They toured various logging operations and such phases of forest management carried on by the State of New York as was of interest to them. They proceeded to the Indian Lake country to observe the handling of pulpwood properties in that region. A. Koroleff, of Montreal, organized the trip.

Max Oberdorfer became president and Robert T. Ellis, vice president, of St. Helens Pulp & Paper Co., St. Helens, Ore., succeeding W. P. Hawley, Sr., and Willard Hawley, who retired and disposed of their stock in that company. In August, 1929, Mr. Oberdorfer had been general manager of the mill for two and one-half years and continued in that capacity.

The Hawleys also retired from Hawley Pulp & Paper Co., Oregon City, Ore., with Mansel P. Griffiths becoming president; George Houk, vice president, and W. A. Kelly, vice president and general manager.

Port Angeles, Wash., broke all past election records on July 31 by a 2,819 to 11 vote for water bonds to enable Olympic Forest Products Co., headed by E. M. Mills, J. H. Bloedel and others, to build a 500-ton pulp mill in that city.

10 Years Ago

A hearing was held on August 3 in Washington, D. C., before Lieut. David H. Tulley, NRA Deputy Administrator in connection with proposed recommendations in respect to the stabilization of the newsprint industry and the elimination of unfair practices and destructive competitive prices.

The Pulp Division, Weyerhaeuser Timber Co., became a corporate member of TAPPI. R. B. wolf, manager of the division, was a former vice president of TAPPI in 1934.

L. M. Alexander, president of Nekoosa-Edwards Paper Co. and Inland Empire Paper Co., died August 7, 1934 at Port Edwards, Wis.

TAPPI Meeting Cancelled

The proposed fall meeting of TAPPI in Chicago in September has been cancelled.

Following the expressed desire of the Office of Defense Transportation and that of several members, the membership of the Technical Association of the Pulp and Paper Industry recently voted, almost unanimously, to cancel its plans for a fall meeting. The annual meeting is to be held in New York in February, 1945.

Sweden Invades South American Market

● Although no European newsprint shipments have been reported to the United States since 1941, Swedish newsprint this year has been growing in importance as a competitive factor for Canadian paper in the South American market.

Chief buying of the Swedish paper has been by Argentina which ships out in the same boats on the return voyages beef for England and various supplies for Sweden.

Already this year Argentina has taken over 40,000 tons of this Swedish newsprint in addition to important purchases of Swedish pulp.

Other South American countries have not been getting newsprint to the same degree from overseas, largely because of lack of shipping arrangements such as have been worked out for Argentina. But recently, a small shipment of 16 tons of Scandinavian paper was landed in Uruguay suggesting that the marketing of the Swedish paper may be widened.

The Latin American countries are anxious to get all the newsprint they can, from Sweden or from anywhere else where it might be obtained.

Ferguson and Maltby Visit Western St. Regis Operations

● President Roy Ferguson and Vice President Ralph Maltby of St. Regis Paper Co. spent ten days in the Pacific Northwest in early August visiting pulp and paper mills and the timber holdings of the St. Regis organization.

The St. Regis kraft pulp division at Tacoma, Wash., of which Walter De Long is vice president and manager, is now producing around 300 tons of pulp daily, half bleached and half unbleached.

Nearly all the bleached pulp is going to far eastern mills to aerial mapping paper for the U. S. Army.

Hardy S. Ferguson Visits West Coast Mills

● Hardy S. Ferguson, veteran consulting engineer, 200 5th Ave., New York City (10), was a recent visitor on the Pacific Coast, calling at mills of one of the larger operators to survey and discuss contemplated postwar plant improvements.

Pulp Mills Using More Small Wood and Sawmill Waste; Canada Offers to Tap New Supplies for U. S. Mills

● Sawmill waste wood—mostly burned in years past—is becoming an increasingly important raw material for the western pulp and paper industry.

The U. S. War Production Board is urging the Puget Sound mills of Washington state to give consideration and study to a proposal by the Canadian Timber Control to make available thousands of more cords of this waste wood, now being used as fuel or simply disposed of by burning.

The proposal is received with mixed feelings by United States mills. Some operators contend it will be an expensive operation (they will pay the bill for bringing waste from Vancouver Island in British Columbia) and will bring them only poor quality wood. They fear the Canadian officials would be less apt to increase next year the already small "token" allotments of logs from British Columbia—offering waste wood in lieu of logs.

Only 32,500,000 feet of logs (about 54,000 cords) is being released to U. S. mills this year under the Canadian embargo. This is only about one-sixth of 1941's shipments—the peak year before the embargo. It has hit U. S. firms which own timber in Canada especially hard.

On the other hand, some operators say they would welcome this waste wood. They believe mills which have the new hydraulic slab barkers in operations would be especially equipped to use this material economically. Some observers say if the mills give serious study to this proposal, they will be in a better position to bargain for Canadian logs, too.

A meeting of all mills using waste wood, cordwood, etc., other than the commonly used large logs of the western industry, was held in Seattle in late July, under direction of the WPB, to discuss the offer. According to WPB officials, it is not true that any of the small wood would count in allotments of Canadian logs.

At this meeting, the increasing importance of small wood, sawmill slabs and waste wood was brought out. Small log hydraulic barkers and special light logging equipment—heretofore never in demand in the west—are being considered by industry leaders. Much more of this small and waste wood, figures show, is being used, coming from both U. S. and Canadian sources of supply.

WPB figures show that 29,142 cords of small wood and waste was shipped to the Port Townsend, Wash., division of Crown Zellerbach Corp., the St. Regis mill at Tacoma, the Everett Pulp & Paper Co. and Puget Sound Pulp & Timber Co. at Bellingham, Wash., from Canada in the first six months of 1944. This is in ratio a big increase over the shipments for the full year of 1943 to those four mills, which totaled 29,142 cords. These are the only four mills so far receiving such wood from Canada.

GEORGE W. CRAIGIE, the new Secretary-Treasurer of the American Pulp and Paper Mill Superintendents Association, joined that group as Field Secretary in 1936. He had previously been employed at the S. D. Warren Co. paper manufacturers, in Camberland Mills, Maine, where he had charge of various departments.

With the Superintendents Assn., he took over management of the annual conventions and later assisted in the publication of several association booklets covering a variety of subjects of interest to the industry. In recent years he has given time and effort to the development of the Industrial Affiliates Plan which makes for closer cooperation between association members and industrial firms and has resulted in a better understanding of each others' problems. One hundred and twelve firms have affiliated with the association.

THIS IS ONE PICTURE the official Canadian movie cameramen missed when they went to Powell River Co., Powell River, B. C., to make a movie showing how that paper industry is helping the war effort.
ROY FOOTE (left), Asst. Manager of the Powell River Sales Co., and DENNIS WOODWARD (right) look on with faint trace of scorn as ARCHIE DeLAND, Logging Manager, saws.

LT. COMMDR. KENNETH CHAPMAN, assigned early this year to the U. S. aircraft carrier Santee after a long term of duty on the U. S. aircraft carrier Saratoga.

LT. COMMDR. CHAPMAN is former Chief Chemist, Everett, Wash., mill, Pulp Division, Weyerhaeuser Timber Co. Between ship assignments, he visited former associates at Everett and at the Coos Bay Pulp Corp. mill at Anacortes, Wash.

Spaulding Pulp Mill Plans Improvements

● A chemi-pulp cooking and recovery system is contemplated as a postwar development at the Spaulding Pulp & Paper Co., Newberg, Ore. This, it is expected, would improve quality of product and reduce cost of manufacture.

The Oregon mill, which produces normally 80 tons of unbleached sulphite pulp daily, is planning to replace mechanical barking equipment with a hydraulic log barker.

Honor for Everett P. & P.

● Employes of the Everett Pulp & Paper Company have been presented a treasury certificate signifying that more than 90 per cent of the employes are investing ten per cent or more of their salary in the purchase of war bonds.

Manufacturers' Chance To Exhibit Products

● Manufactruers of equipment and supplies have a chance to display wares at the Cavalcade of Printing Equipment exhibit in Stix Baer & Fuller Department Store, St. Louis, November 3-11. There is no charge for space.

A miniature paper making machine is going to be shown.

The exhibit is sponsored by the Associated Printers & Lithographers of St. Louis. Early in September material will be chosen on a basis of historical and educational merit and audience participation. Information can be obtained from Don O. Pyke, sale promotion manager, Graham Paper Co., 1014 Spruce St., St. Louis, 2, Mo.

New Self-Sterilizing Silver Surface For Food Wrap Described at PASC Meeting

GUESTS AT THE PASC MEETING IN LOS ANGELES:
(Left to right) Dr. ALEXANDER GOETZ, who discussed development of a new silver self-sterilizing wrap coating; Mrs. SYLVIA GOETZ, and K. MAARTMAN MOE, of Norway, who discussed the Scandinavian pulp and paper industry.

● FEATURING a double-bill program of outstanding interest, the Papermakers and Associates of Southern California met at the Rosslyn hotel, Los Angeles, on August 3, two weeks earlier than originally planned.

Speakers were K. Maartman Moe, of Norway, prominent in the Scandinavian pulp and paper industry, who is currently making a tour of the United States mills. He gave an informative description of the pulp and paper situation in Norway, Sweden and Finland and offered some views on what may develop after the war.

Dr. Alexander Goetz, director of research, Rare Metals Institute, California Institute of Technology, presented an illustrated discussion of self-sterilizing surface materials, the product being that which has been developed at the Institute during seven years of experiments on new uses of silver under a grant from Sunshine Mining Co.

Scandinavian Review

● Mr. Moe stated that hydraulic power is much used in the three Scandinavian countries. Norway has 14 to 15 million kilowatts that can be harnessed; Sweden has 7½ million and the quantity in Finland is smaller. The price of electrical current in the three countries is about the same and is very low.

American, English and German machinery is used in the mills, and in recent years home-produced equipment has come increasingly into use.

The work week for all three countries is 48 hours. In Sweden and Norway there are 285 to 290 working days a year, with 12 holidays with pay. Wages are lower in Finland because that country is largely on an agricultural basis, economically.

Following is a resume of Mr. Moe's talk:

Production of pulp and paper in short tons during 1937 was as follows:

	Pulp	Paper
Sweden	2,814,000	732,000
Finland	1,610,000	704,000
Norway	724,000	389,000
TOTAL	5,148,000	1,816,000

Production in war years has become gradually smaller, because of an insufficient quantity of coal received from Germany. It is expected that, following the war, the demand for paper in all European countries will be tremendous. Inasmuch as present stocks are very small, it is quite likely that all the pulp and paper produced in Europe will be absorbed there. Actually this depends on how many mills will have been destroyed by the Germans.

Norway

● Norway being a country of high mountains and narrow valleys, uses hydraulic power extensively and the mills are necessarily located near the waterfalls. The Germans have mined all dams and bridges, and it remains to be seen whether these properties will be destroyed. If left intact, the machinery in the mills will be in about the same condition as before the war.

The mills in Norway are smaller by comparison with those of Sweden and Finland and no new mills have been built since 1914. The mills' capacity exceeds the available timber supply and the forests contain much more spruce than pine. There are only four major sulphate mills in Norway.

Sweden

● Most of Sweden's terrain is comparatively flat. It contains many forests and the mills are larger than those of Norway, being located mostly in the middle and southern parts of the country. The forests contain only one grade of spruce and pine—both high in quality—and there is a good balance between the timber supply and the mill production. About half of the mills are sulphite and the other half sulphate.

The mills are highly modern, especially those using sulphate pulp, which are among the finest in the world. They are ready to produce at the maximum rate after the war, and 450 to 500 Million tons of pulp now stands ready for shipment, Mr. Moe said.

Labor is unionized and there is little labor trouble because all problems are settled at a conference table.

Finland

● Finland is a very flat country having many fine forests. The mills are more modern than those of any Scandinavian country, with only a few mills built before the revolution in 1918. All mills are well located and have excellent buildings for the use of workers. Labor is unionized, but there have been no strikes since 1918 because of laws prohibiting them. The man-hour rate per ton is low enough to be compared favorably with that of the United States. The mills have been kept in good condition since the war began and are ready for high production.

Distribution of products undoubtedly will depend on the arrangement made with Russia after the war. That country does not possess enough paper mills to meet its own requirements, therefore much paper will come from Finland after the war. This, despite the fact that all the paper mill machinery and equipment in the Baltic states were moved into Russia after occupation of those countries by the Russians.

Dr. Goetz's Talk

● Dr. Goetz based his talk on the more practical applications of self-sterilizing surface materials, both to water treatment and in food packaging. He pointed out that the food industry has become more conscious of the possibilities of shipping large quantities of food for storage, which naturally experience the same degree of attack by bacteria in going into a strange environment as do human beings.

While stating that the most effective way of excluding bacteria from food is to pack the food in tin cans, yet he agreed that obviously this method of packing cannot be used exclusively. Wrapping materials, paper and plastic containers must be used. While they do not have the mechanical rigidity of tin, must rely on seals, folds, etc., and are subject to varying storage conditions and humidity, it is still economically necessary to use such wrappers and containers.

The only way to overcome the handicaps mentioned is to produce wrapping and container materials which kill microorganisms and which form a barrier that makes transgressions by the latter improbable. To accomplish this task offers different problems than is met by germicides or the use of ultra violet. Food processors hesitate to introduce germicides because all germicides are toxic in varying degree. If absorbed by food, they would present a health problem. It has been necessary, therefore, to develop an insoluble material that is little, if at all toxic.

Dr. Goetz stated that an amazingly small amount of silver will attract certain organisms under certain conditions, carbon black being the best absorbtive compound yet discovered. Combined with plastic bindings, the coating which results will cover an enormous area at extremely low cost.

Much of his talk dealt with the possibilities of the product in preventing the collection of impurities in water pipes. He stated that if the trouble points are reachable, the coating material undoubtedly would be helpful.

The stereoptican slides created much discussion and many questions were asked by various individuals. Photographs were passed around showing the success in combatting mold growth on cellophane. Dr. Goetz' talk was of such high interest, in fact, that the meeting was held longer than usual and was regretfully brought to a close only by the lateness of the hour.

Attendance

● **F. W. Adams**, Los Angeles Paper Box Co.; **D. Erle Arnett**, Magnus Chemical Co.; **W. E. Baier**, California Fruit Growers Exchange, Ontario, Calif.; **Robert A. Baum**, Fernstrom Paper Mills, Pomona, Calif.; **A. O. Beckman**, National Technical Laboratory; **Herman Berg**, California-Oregon Paper Mills, **Howard Bidwell**, Pioneer-Flintkote Co.; **Bruce F. Brown**, Fibreboard Products Inc., **Bruce F. Brown, Jr.**, Fibreboard Products Inc.; **Grover O. Brown**, Pioneer-Flintkote Co.;

Richard S. Buckley, Fernstrom Paper Mills; M. E. Campbell, U. S. Gypsum Co.

A. E. Carlson, Pioneer-Flintkote Co., A. L. Chattock, Richfield Oil Corp.; George M. Cunningham, National Oil Products Co.; Ralph David, Pacific PULP AND PAPER INDUSTRY, R. C. Davis, U. S. Gypsum Co.; Merle L. Dorman, California-Oregon Paper Mills; C. G. Frampton, Fernstrom Paper Mills; J. W. Freeland, Pioneer-Flintkote Co.; George A. Frogner, Pioneer-Flintkote Co.; Donald V. Gayton, Peter Cooper Glue Corporations; Dr. Alexander Goetz, California Institute of Technology, Pasadena; Mrs. Sylvia Scott Goetz, California Institute of Technology; E. E. Harper, Research Engineer, Monrovia, Calif.; Mrs. E. E. Harper, Monrovia, Calif.

Alonzo H. Hatch, California-Oregon Paper Mills; Joe E. Hartford, U. S. Gypsum Co.; E. C. Hill, California-Oregon Paper Mills; Wm. H. Kewell, Los Angeles Paper Box Co.; William A. Kinney, Pioneer-Flintkote Co.; M. C. Larsen, Pioneer-Flintkote Co.; Frank Mark, Western Asphalt Assn.; J. E. Maurer, Fernstrom Paper Mills; J. N. Mills, Consulting Engineer; Jack Montgomery, Pioneer-Flintkote Co.

R. T. Petrie, Black-Clawson Co., Portland, Ore.; Richard Pomeroy, Montgomery & Pomeroy, Pasadena; Guy Pulley, Pacific PULP AND PAPER INDUSTRY; Allen Rydall, Fibreboard Products Inc.; G. Foster Rucker, Leeds & Northrup Co.; Lloyd I. Ramsey, The Adhesive Products, Inc.; Otto Sass, Pioneer-Flintkote Co.; H. L. Scherrei, El Rey Products; Walter H. Schulken, Schulken-Purmean Paper Stock Co.; Frank Searcy, U. S. Gypsum Co.; Jerry H. Setinsky, Pioneer-Flintkote Co.; W. O. Sharman, California-Oregon Paper Mills; A. J. Smith, Fibreboard Products Inc.; C. Reed Sutherland, Bireley's Inc., Hollywood; Ralph L. Swim, U. S. Gypsum Co.; H. Vought, Fernstrom Paper Mills; C. W. Wilson, California Fruit Growers Exchange, and Frank H. Wheelock, Fibreboard Products Inc.

Water Shortage May Curtail Newsprint; Stenstrom Discusses East Canada Developments

● Canada will probably be able to maintain exports of newsprint to the United States on a basis of 200,000 tons monthly providing the water shortage does not force further curtailment, according to David G. Stenstrom, deputy newsprint administrator for Canada, whose headquarters are now in Montreal.

Mr. Stenstrom, well known on the Pacific coast because of his previous associations with British Columbia pulp and paper mills, re-visited the coast recently after serving six months in his present post in eastern Canada.

Mr. Stenstrom says that the Canadian industry made its commitment on newsprint supply to United States publishers for the July-September quarter, but for the balance of the year the allocation to that market will depend on wood supply and the effect of the water shortage which gave signs of being serious early in the summer. If the allocation is reduced for the final three month period it will not be because of a deficiency in the wood cut, however.

The manpower situation in eastern Canada has shown some improvement this year, according to the deputy newsprint administrator, and in Quebec last winter the supply of men was about 25 per cent better than in the previous season. Ontario, however, was unable to show the same improvement and while it is hoped that the over-all gain will be held there may be some diversion of labor from the paper mills because of the stepping-up of the munitions program in some eastern centers.

Neswprint is now being produced in Canada at the rate of approximately 240,000 tons a month for all markets, including the domestic, so that five-sixths of the total production is being supplied to the United States.

Mr. Stenstrom said that the small amount of logs exported from British Columbia to Puget Sound mills in United States were more of a token of goodwill than an acknowledgement of a surplus in the Canadian market, but he felt sure that the Canadian industry would do all in its power to help United States mills in solution of their raw material problem. Regarding general trends in the Canadion industry, Mr.Stenstrom looks for large-scale improvement and refinement in the operating setup of many Canadian mills, but not much increase, if any, in newsprint production in view of the fact that there is already considerable unused newsprint capacity now. He expects that there will be a general tendency on the part of mills favorably located to enlarge their bleached sulphite capacity in view of the growing market for dissolving and similar pulps.

Among the interesting new developments in eastern Canada referred to by Mr. Stenstrom were Brompton Pulp & Paper Co.'s acquisition of the Lake sulphite mill and its conversion into a kraft producer, and the purchase by Kalamazoo Vegetable Parchment Co. of one of the long idle Spanish River mills owned by Abitibi. Because most of the spruce in that region has been cut, the company plans to utilize the jackpine still abundant there in the manufacture of kraft. He also mentioned the expansion program recently announced for Howard Smith Paper Mills.

Mr. Stenstrom was interested in the progress being made by Powell River Co. in connection with its log salvage experiment and inspected the company's small sawmill installed for handling the small logs on their way to the pulp mill. He believes that this experiment may open the way for an extensive adoption of this procedure by independent operators who, once assured of a market, will find it worth while to follow in the wake of primary loggers on the west coast and convert into usable pulpwood material that would otherwise be wasted.

New Brown Co. V. P.'s

● Herman Schanche, who joined Brown Co. just 17 months ago to direct woods operations, has been elected a vice president of the New Hampshire pulp and paper firm and also of Brown Corp., its Quebec affiliate. He will continue his duties directing wood production.

Downing P. Brown also is a new vice president of Brown Co., handling sales in New York, and Wentworth Brown is a new vice president of Brown Corp., and continues as production manager of both companies.

A Hot Weather Idea

● In hot weather, the Fernandina, Fla., division of Rayonier Incorporated makes salt pills available throughout the mill for employes.

Employes who perspire greatly are advised to take them or break up the pills and take parts of them at intervals. A thirty per cent loss of salt from the body through perspiring causes dizziness and when the loss reaches 50 per cent it causes prostration.

TWO MAYORS ARE TRYING to settle which "home town" Radio Star NORA LOU MARTIN belongs to by a tug-of-war.

Mayor R. W. SIMERAL of St. Helens, Ore., who is Vice President and General Manager of Fir-Tex Insulating Board Co., is tugging on the right. Since there are three pulp and paper industries in St. Helens, we are inclined to "pull" with Mr. SIMERAL. But Mayor EARL RILEY of Portland, Ore. (left), can claim his city is one of the biggest paper marketing and business centers in North America, which makes it a difficult decision.
EDDIE CANTOR, in whose war bond show Nora was singing during this tour, is also in the picture.

Pulp, Paper and Cellulose Dominate Western "Plastics-Plywood" Conference

THREE OF THE SPEAKERS AT THE SEATTLE PLASTICS-PLYWOOD CONFERENCE who talked about applications of wood pulp, paper and cellulose made from wood pulp:
(Left to right) H. B. DeWAIDE, Bakelite Corp.; T. S. CARSWELL, Manager, West Coast Division, Monsanto Chemical Co., and JOHN K. SPEICHER, Hercules Powder Co.

● Paper overlays for plywood, pulp molding and paper laminates and cellulose plastics were among subjects of particular interest to the pulp and paper industry at the July 13,14 plastics-plywood conference at the Chamber of Commerce in Seattle.

Among the 400 who attended, were a small number who were interested in, or associated with, pulp and paper industires. However, one entire session was given over to the subject of pulp—rather than either plywood or plastics, as such. In fact, pulp, paper and cellulose were dominant subjects although the meeting actually was sponsored by plywood and plastics associations of the West Coast.

Paper-Covered Plywood

● The opening talk by N. S. Perkins, technical director, Douglas Fir Plywood Assn., stressed the point that the plywood industry wants to enlist the assistance of papermakers in development of paper-covered plywoods. He stated that overlaid planes are being used by the armed forces and will be available for civilian use after the war. Meantime, he suggested, standardization of a few grades of overlays should be accomplished.

J. D. Long, chief of research, Douglas Fir Plywood Assn., stressed the importance of the self-bonding type of paper overlays. A second type he described as non-bonding.

In the self-bonding type, he predicted three grades eventually would be established:

1. Industrial surface, hard, non-absorbent, high abrasive resistance.
2. General usage, with more porous surface to take bonding or paint.
3. Integral decorative panel.

He mentioned variations in mechanical abrasion, setting plywood at zero to show 3 to 6 times as much resistance in resin impregnated and 12 times if melamines were used; impact resistance was specified at 1-5; and flexual tests were held to show little additional strength.

Of the non-bonding types, Mr. Long mentioned phenolic papers. He said stiffness would result if the overlays were applied across the plywood grain.

Pulp-Molds and Laminates

● T. S. Carswell, Monsanto Chemical Co., discussed "Large Molding Techniques."

"Resin-pulp molding," he said, " simply consists in the art of making a uniform dispersion of resin and pulp in water, preforming this mixture to a shape which closely approximates the finished article and subsequently curing it in the mold under heat and pressure. The pressure applied, however, is usually very much less than that required for conventional molding. The idea itelf is not new, and is obviously an adaptation of the old papiermache process.

"However, a great deal of work on the part of many individuals has been necessary in order to perfect methods of pulp performing, methods of introducing the resin, methods of drying the preform, and finally, methods of molding.

"A typical pulp preforming operation may be described in the following way: The pulp stock is first thoroughly dispersed in water to give a uniform suspension containing from 3 per cent to 6 per cent of fiber. A beater may be used for preparing the pulp suspension although in many cases a simple, well agitated tank will serve if the pulp stock already has gone through a beater. Many varieties of pulp stock may be used, and the strength and other properties of the finished article will depend to a large extent on the starting pulp. For example, Kraft stock, ground up rags, bleached pulp, and many combinations of these may be employed.

"The stock is then transferred to a preform tank where the concentration is reduced to 0.2 to 1.0 per cent fiber. The preform tank contains a felting screen of approximately the same dimensions as the finished article. The pulp stock may be drawn through the felting screen either by suction or pressure. The suction technique is useful for relatively flat objects, while pressure may have to be employed in cases where sharp contours are encountered. The finished felted preform is then withdrawn from the tank and dried.

"Drying may be accomplished either by heating in an oven or by placing the preform between two perforated dies having the shape of the finished object and forcing air through the preform.

"The dried preform may then be impregnated with a resin solution. The amount of resin pick-up depends on the concentration of the resin solution and the time the preform is immersed. A more recently developed technique eliminates the use of a resin solution altogether. In this technique phenol aldehyde resin is added directly to the beater or dispersing tank and is intimately mixed with the pulp suspension."

Speaking of laminating, Mr Carswell said pressure ranging from 1500 to 3000 pounds a square inch were required, which multiplied costs, but told of decreased pressures coming about through war demands, and delevopment of improved fillers, and improved resins. He mentioned high strength paper use in laminating with fibers lying in one direction, and others lying in alternate directions. Summarizing three techniques, Mr Carswell said:

"1. **Pulp molding** appears to be most economical when a rather large number of pieces are desired, when the weight of the part runs from 8-64 ounces, the largest projected area from 25-400 square inches, with thin sections which require considerable impact resistance. It is suited to the production of relatively large articles which have complex forms and a relatviely uniform cross-section thickness. Pulp molding lends itself to the production of trays, helmets and housing for machine parts, such as adding machines, vacuum sweepers, etc.

"2. **Low pressure laminating** appears to be most economically applied when the number of parts required is not too great, and when the size of the part is larger than can be handled by pulp molding at the present time. For example, any object with a projected area greater than approximately 400 square inches can well be made by low presure laminating. This means that low pressure laminating may be adapted for the production of large airplane parts, refrigerator cabinets, furniture parts, etc.

"3. **Postforming of laminates** appears to be particularly economical when a limited number of parts is required and when involved contours or deep drawings are not required. Postforming also offers a great convenience. in that standard flat sheets can be stocked at the point of parts manufacture. These sheets have a hard surface and store indefinitely. Thus, great flexibility in design and product is permitted—economical for a variety of parts, when only a limited number of each is required."

Cellulose Plastics

● J. K. Speicher, Hercules Powder Co., gave a paper on "Recent Developments in Cellulose Plastics," which are being made to a large extent today from wood pulp.

Of all the possible products of cellulose, he said only four are widely used in plastics—cellulose nitrate, cellulose acetate, cellulose acetate butyrate and ethyl cellulose — and were developed in the order named.

"Perhaps in time to come new derivatives will be added to the list but there is no such advance to announce today," he said.

"Cellulose plastics got their start by virtue of beauty and glamour," explained Mr. Speicher, in recalling that before the war they were used principally for toilet articles, household items, costume jewelry, pens, pencils, toys, etc. They had high impact strength, were very nearly colorless, made excellent crystal plastics, giving clear tints and hues.

"Came the war," he went on," and the Quartermaster Corps, Signal Corps, Ordnance Department, etc., wanted all sorts of equipment which could be made of plastics and perhaps cellulose plastics. They didn't care what color it was as long as it was olive drab and dull. But they did want a flashlight, for instance, that would not break if dropped on the hard ground at sub-zero temperatures, that would not soften at desert heat, that would not warp at tropical humidity, that would mold to close tolerances so that parts would be interchangeable. In short, they were interested in physical properties and had to have some properties, such as toughness at very low temperatures, that had never been considered before. This situation which led to functional testing of plastics is, in large degree, responsible for recent advances. While color and transparency are tremendously important properties of thermoplastics in some war uses, as in the transparent inclosures of air planes, the emphasis has shifted from beauty and glamour to strength and endurance.

"Most of you probably know something about ethyl cellulose since, although it is the newest of the cellulose plastics, it has been well publicized. However, the effect of ethyl cellulose on the plastics business is just beginning to be felt and the marked increase in its importance during the past year may well be considered a recent advance. Since this has been a wartime development the uses of ethyl cellulose are strictly functional, that is, they depend on the fact that ethyl cellulose has properties which make it the only material which will do certain jobs well.

"Fortunately for the country, but unfortunately for purposes of public discussion most of these new uses of ethyl cellulose are of a military nature. However, the funadmetnal properties which dictate the use of ethyl cellulose are no secret. One is the wide useful temperature range. Ethyl cellulose plastics have a high enough soften-point that they are useful at the highest temepratures normally encountered and they do not become brittle or lose their impact strength at very low temperatures. The useful temperature ranges of cellulose acetate and cellulose acetate butyrate have been extended by improved formulation but ethyl cellulose is still in a class by itself in this regard."

Phenolic Plastics

● H. B. DeWaide, of Bakelite Corp., presented a paper on "Phenolic Plastic Possibilities." He said his company's phenolic molding materials may be grouped into four classes—general purpose, shock-resistant, heat-resistant and special phenolics.

"The general-purpose phenolics, consisting of celulose-filled materials, perhaps have the largest range of application, he said. "They may be employed for such commonly known articles as instrument cases, containers, electrical insulation, builders' hardware, buttons, bottle caps, molded radio capacitors, automotive ignition parts, and numerous others.

"The shock-resistant phenolic materials are made by incorporating phenolic resin with chopped paper or fabric. This product has increased resistance to shock and impact. Articles molded from this material consist of washing machine agitators, flashlight housings, oil well drilling parts, textile shuttles, steel mill roll neck bearings, and heavy-duty electric switch housings.

"Heat-resisting materials are also made from the base phenolic resin but are mineral-filled rather than filled with cellulose materials or paper.

"Special materials include the transparent phenolics which contain no fillers and are noted for their hardness, heat resistance, dielectric strength, dimensional stability and high index of refraction. Their applications include automotive tail lights, x-ray lenses, traffic light signals,

AT THE PLASTICS-PLYWOOD CONFERENCE in Seattle, two other P'S—PULP AND PAPER—almost stole the show. Among those present:

Top row (left to right): Dr. LEO FRIEDMAN, Oregon State College, where experiments in wood and pulp plastics have been conducted by him; J. B. HYDE, of the Central Technical Dept., Crown Zellerbach Corp., and consultant on problems of the Western Waxing Division of C-Z Corp. (who participated in pulp molding and paper laminates session); EUGENE TOWER, Oregon State College; FRED ARMBRUSTER (of Seattle), Pacific Northwest representative of Dow Chemical Co., and Dr. FRANK B. SMITH, wood technologist, Technical Service & Development Division, Dow Chemical Co., Midland, Mich. (A. H. HAMMOND, head of Western Waxing Division, Crown Zellerbach Corp., also was at the session).

Lower row (left to right): LAWRENCE K. SMITH, Manager, Pacific PULP & PAPER INDUSTRY; RALPH M. ROBERG, Vice President and Sales Mgr., Puget Sound Pulp & Timber Co.; J. D. LONG, Chief of Research, and N. S. PERKINS, Technical Director, both of the Douglas Fir Plywood Assn., Tacoma, Wash., who appealed to the paper industry for assistance in development of plywood paper overlays; P. W. GRIFFITH, Plastics Division, American Cyanamid Co., Azusa, Calif.; and H. P. BANKS, President of I. F. Laucks Co., Seattle, now part of Monsanto Chemical Co.

instrument housing, transparent containers, and gauge glasses."

Mr. DeWaide's predictions were:

"What the future holds for phenolic resins is anybody's guess, but an industry that draws on such basic raw materials for the manufacture of its products as coal, wood, gas, cotton and oil, in a country where such natural resources are as plentiful as they are in the United States, is building on a sound foundation. The refinements of the phenolic resin materials caused by war applications give them a much broader field for postwar use. The phenolic plastic materials possess combinations of properties and characteristics that provide manufacture with a wide latitude in selecting materials to meet their specific problems—materials ranging from high dielectric strength to those with exceptional water resistance; materials that are tough and resilent to those that are hard and rigid, and in a wide range of colors.

"Phenolic plastics will find their way in the prefabricated home of tomorrow as adhesives for plywood wall sections, phenolic resin impregnated paper used as overlays for plywood for decorative paneling, as a base for paint and protective coatings, also as strategic parts in the manufacture of equipment and fixtures for the home. They will maintain their position in the aircraft and automotive field and perhaps be a source for many more molded parts that heretofore have not been conceived."

Plywood Industry Turns to Pulp and Paper; Kimberly-Clark Paper Used as Overlays

● The fast-growing plywood industry, which started from scratch little more than 30 years ago, is now turning to the pulp and paper makers for important assistance.

Paper overlays are used to face both sides of plywood sheets by two leading producers in Washington and another one in North Carolina. This high strength, resin-impregnated sulphite paper is produced by Kimberly-Clark Corp., Neenah, Wis., and is known as "kimpreg."

Another big western producer of plywood has been surfacing its product with overlays of impregnated semi-kraft paper, supplied by a Washington state mill. These overlays make a product superior in quality and durability to the ordinary plywood. They won't splinter or swell.

There are also reports that a Washington state plywood firm is planning to build its own pulp mill, probably making groundwood pulp.

Eighty per cent of plywood is made from Douglas fir on the Pacific Coast and there is a time coming when there will be a scarcity of available large-size Douglas fir peeler logs, necessary for the production under present methods of operation.

Resins have been developed capable of making pulp and paper of a strength comparable with wood. For this reason, some chemists foresee a wood pulp product, made with orthodox papermaking processes, as eventually replacing plywood. Made by continuous process, instead of in batches, as plywood is now made, it would probably be much more economical.

If the pulp and paper industry serves the purpose of prolonging the life of the plywood industry or diverting it to new production methods, it will likely inherit shares in highly profitable business. The booming plywood industry of the Pacific Northwest alone is estimated as worth around $100,000,000.

—Photo by U. S. Army Signal Corps.

ON THIS GLASS-LIKE SMOOTH SURFACE MADE OF KIMPREG IMPREGNATED PLASTIC PAPERS, a parachute is shown being folded. It is necessary to guard against snagging the silk and the best possible table surface is essential. Kimpreg, used for plywood surfacing, is a product of Kimberly-Clark Corp., Neenah, Wis., and is supplied to Pacific Northwest plywood manufacturers.

The government asked the large Wisconsin paper company to take scrap helmet liner material, which consisted of small scraps of resin impregnated canvas die cut which was left over in manufacture of sun helmets for the military forces, and to make plastic surfacing out of it. Kimberly-Clark did this successfully and made a large quantity of this plastic paper for war uses, mainly in covering of plywood for export cases, bomb cases, boxes, lockers, etc.

Kimberly-Clark Products

● Kimberly-Clark Corp. makes its overlay papers in two types. One is an all-rag-content paper, impregnated with uncured phenolic resin that is reclaimed from fabric helmet liners. The other is a high-strength sulphite-base sheet similarly impregnated with phenolic resin. Either may be used for plywood surfacing, as pre-cured sheets for cold press application, or may be bonded to the plywood by combined heat and pressure. The new material and methods of applying or bonding it to plywood are being worked out with a limited number of producers in order to develop and perfect standards that will meet postwar requirements of the entire industry.

Paper overlays for plywood already have proved their ability to meet unusual military requirements. The surfacing material is made to withstand high impacts.

Still another use of this versatile material is in wartime airplanes, as floor sections of unusually light weight and extremely high strength. The floor surface is made of plywood with paper overlays coated with a non-slip surfacing material. Reinforcing ribs that support the floor likewise are of kimpreg plywood combination molded into corrugated members. Floor sections of this type may find a number of postwar applications, for their use would permit wide spacing of floor joists, with a high degree of rigidity and unusually light weight.

The overlays can be used to cover curved edges giving a continuous, one-piece surface. The material can be made in a number of attractive colors and designs, or can be "clear," permitting wood grain to show through. Numerous applications suggest themselves to men who are familiar with construction methods and needs.

Paper overlays are now used under license agreement in three mills: Buffelen Lumber & Mfg. Co., Tacoma, and Washington Veneer Company, Olympia, Washington, producing Douglas fir sheets; and the Daystrom Corporation, Daystrom, N. C., producing hardwood sheets. Output of the first two named companies is marketed through the C-W

Plywood Company, Chicago, Illinois, under the name of "Inderon." At present, practically none of this plywood is available for civilian use.

Harbor Plywood Corp., Hoquiam, Wash., makes a product called "superharborite," already a success in the armed forces, which is a plywood surfaced with impregnated semi-kraft paper. Normal pressures are used for bonding. There is no appreciable compression of the component veneers, the engineers say.

Installs Own Roll Drier

● This corporation is installing a roll drier similar to that used in the pulp industry. It will be used to dry the impregnated paper and has been designed by company engineers.

On the other hand, the M & M Plywood Co., Portland, Ore., after two years of research on impregnated paper, now believes that it has another answer. They would continue to use wood surfaces and it is understood that their methods would be a process for hardening of the wood, so that poorer grades or poorer quality of wood could be used successfully when the big, more perfect peeler logs become more scarce.

In the search for raw materials, the plywood industry on the west coast may become a competitior of the pulp and paper industry.

Heretofor, Douglas fir is the wood used by the plywood people but as available fir becomes more scarce, they are conducting research in hemlock. Until recently, hemlock was used almost exclusively by the pulp and paper industry. But it has found other uses—even in aircraft grade lumber—and as more industries covet the fast-growing hemlock, its price has gone up, making new difficulties for the pulp and paper producers.

Louis W. Schatz of the Forest Industries Research Co., Tacoma, Wash., has applied for a patent on a process to use hemlock as a plastic with its own lignin as a binder.

Dr. Bates Discusses Greater Utilization of Resources

● Fullest possible utilization is the basic problem and should be the chief objective of the pulp and paper industry in the west, according to Dr. John S. Bates of Montreal, outstanding Canadian woods technologist and chemical engineer, who spent some time on the coast this summer visiting various pulp and paper operations.

Dr. Bates, who is associated with Price & Pierce, Ltd., usually visits the Pacific coast once a year to keep in touch with developments.

In an interview with Pacific PULP & PAPER INDUSTRY, Dr. Bates said:

"It seems vitally important to me to co-ordinate processes for the fullest utilization of wood in any district for the sake of spreading overhead and reducing overall costs and safeguarding industry. Wherever possible diversification of production in the forest industry is something to be encouraged.

"Equally important but not so obvious to the man in the street is the need and definite action on the part of the government to co-operate with the industry to insure an improving forest as time goes by. Anything less than that naturally brings about a gradual decline in forest wealth with consequent economic loss to the community."

Paul E. Cooper Becomes President Of Pacific Mills, Ltd.

● Paul E. Cooper, who came out from England to become vice president and general manager of Pacific Mills, Ltd., at Vancouver, B. C., has been made president of that company, succeeding A. B. Martin of San Francisco, who now becomes chairman of the board.

Louis Bloch, formerly chairman, retains his active association with the Canadian company as a director.

J. A. Young, of Vancouver, continues as vice president and treasurer. H. C. Pim continues as vice president and J. H. Lawson as secretary, with A. G. McLennan, assistant treasurer and assistant secretary.

Directors, most of whom are resident in Canada, are C. A. Cotterell, E. W. Hamber, Mayne D. Hamilton, J. H. Lawson, W. E. Wintermute and Messrs. Martin, Pim, Bloch, Cooper and Young.

Appointment of Mr. Cooper as president marks another step in the policy of making Pacific Mills, Ltd., a more self-contained and independent Canadian organization. Although Mr. Cooper was managing the Thames Board Mills, Ltd., at Purfleet, England, biggest board producing and converting factory in the British Empire, when he accepted a post with Pacific Mills last summer, he is a Canadian by birth, 44 years old, a graduate in civil engineering from McGill University and formerly associated with International Paper Co.

In 1933 Mr. Cooper was with the Continental Paper & Bag Corporation at Rumford, Me., as manager, and he resigned that position to join Thames Board Mills.

Efficiency in Loading and Unloading Methods

On left is shown waste paper from Puget Sound, unloaded at Powell River, B. C. On right, the S. S. Indian's electric lift truck backs onto ship elevator with a newsprint roll for the return journey.

● Powell River Co., using old newspapers in the manufacture of paperboard, has completed arrangements for collecting a considerable volume of this material at Puget Sound ports.

Ordinarily, the cost of collecting, sorting and shipping the comparatively small tonnage as compared with bulk would not be considered worth while, but wartime shortages have made this practice expedient. Logs are conserved for higher quality products.

Most of the old newspapers are taken to Powell River on the steamship Indian of the Puget Sound Freight Lines which carries newsprint rolls south. Loading operations are now possible which eliminate heavy labor and reduce the accident hazard. Newsprint rolls in the Powell River sheds rest on skids which are picked up by Elwell-Parker electric lift trucks, carried aboard the boat and stowed exactly as they were in the freight shed.

Thus, three sets of skids are used—one for the warehouse, one on ship and one in the storage sheds at destination point. The ship returns the skids on the next trip.

Rolls are picked up by the Elwell-Parker trucks as shown here, carried to a convenient place alongside the ship, where the skids are taken over by the ship's lift truck and carried down the elevator direct to their place in the hold. The truck returns via the elevator to the ship's side, picks up another skid, and so on.

GEORGE O'BRIEN, ex-Chairman of British Columbia Loggers Assn. and for years head of O'Brien Logging Co., who recently was elected Vice-President of Powell River Co.

Two New Evaporators

● In addition to the bleach plant and installation of a precipitation unit at the Ocean Falls plant of Pacific Mills, Ltd., two additional evaporators will be set up in the kraft mill, according to announcement of President Paul E. Cooper. These units were manufactured by Whiting Corporation.

High Strength, Low Pressure Molded Paper Base Laminates

By CHARLES F. MARSCHNER
Plastics Division,
Consolidated Water Power & Paper Co.,
Wisconsin Rapids, Wis.

● In recognition of the possibilities of plastic materials in the construction of structural and non-structural aircraft components the engineering personnel of the A.A.F. Materiel Command established a plastics development program approximately four years ago. One of the problems undertaken in this program was the development of materials having engineering properties suited to the fabrication of strictly structural assemblies. This portion of the program was undertaken, along with other programs, by the Forest Products Laboratory in cooperation with several private organiaztions in the plastics and aircaft industries. The finding of these groups rather firmly established paper and similar aligned fiber materials as being the most promising fillers for the production of high strength laminates.

As the development work progressed increasing emphasis was placed upon the attainment of good strength characteristics in laminates molded at low pressures. It was obvious that the very high molding pressures normally encountered in plastics laminating would result in excessive die and equipment costs when aircraft size moldings were considered. The requirement of low molding pressure plus the necessity for excellent impregnating characteristics required the development of resins especially suited to this work. A number of very good low pressure resins are now available for impregnating the relatively dense, high strength Mitscherlich spruce sulphite paper which has shown such excellent mechanical properties when used as a filler material. Good electrical characteristics, which previously had been the principal advantage of paper base laminates, may be considered unimportant in laminates employed primarily for structural uses.

In 1942 the Consolidated Water Power and Paper Co. established a Plastics Division in answer to a growing demand for both impregnated high strength paper base molding stock and finish molded high strength paper base panels and standard shapes suitable for fabrication into various structural assemblies. Prior to the establishment of this division the company's technical staff had been cooperating in the development program and had made the organization's extensive spruce sulphite paper manufacturing facilities available for development work. As a result of these activities high strength plastics materials are now commercially available to the plastics and aircraft industries in the form of rolls and mats of treated paper ready for molding and also in the form of standardized panels and structural shapes which can be used by fabricators in the production of assemblies. These raw materials are called Consoweld.

CHARLES F. MARSCHNER, of Consolidated Water Power & Paper Co., well known Wisconsin paper company and one of the leaders in the plastics developments in the industry. Mr. Marschner presented this paper at the Society of the Plastics Industry, West Coast Section, Los Angeles, on Feb. 21, 1944.

A number of very important semi-structural and non-structural assemblies made from Consoweld are now in large quantity production. Flight tests have been successfully conducted on primary aircraft assemblies made entirely from low pressure molded high strength paper base laminates. Various very large primary structures made from sandwich materials with wood core and Consoweld faces are now in production.

Results of Tests

● As a result of developmental and test work a number of conclusions regarding the mechanics high strength laminates can be drawn:

1. Phenolics seem to provide the best inter-fiber bonds. Other resins are now being developed which will be as satisfactory or possibly more satisfactory than phenolics in this respect.
2. The lateral displacement of fibers caused by weaving or by twisting the strands (or a combination of the two) makes it impossible to develop the full strength and modulus of the fibers. A high degree of fiber alignment is essential.
3. Reductions in resin content to a practical minimum provides better mechanical properties by permitting an increase in the number of strength-giving fibers for a given quantity (or weight) of finished laminate. The use of suitable resins permits the attainment of low moisture absorption characteristics.
4. High strength can be achieved only by using a filler material of a fibrous nature. Furthermore the fibers must themselves have a strength-weight ratio substantially greater than that of the best metal alloys. This is essential in order to make up for the low tensile strength of the resins and to provide high strength even when the laminae are crossed and only half the fibers may be "working." It is useless to employ metal mesh or wires in the laminate to provide strength because the "strength-weight" ratio will always be less than that of the metal alone.
5. Glass laminates are inherently denser than laminates incorporating natural fibers due to the glass itself having a specific gravity of about 2.5 as compared to about 1.4 to 1.5 for natural fibers. The higher density of glass laminates renders them less desirable as an isotropic material where buckling stability is desired.
6. The compressive strength of laminates in a direction parallel to the laminate depends largely upon the effectiveness of the resin as a bonding agent. Too great a decrease in resin content cannot be tolerated if good edgewise compressive strength is desired. A 30% to 35% resin content presently appears to be about the practical minimum for paper base laminates.
7. For each molding pressure there appears to be an optimum resin content to provide optimum tensile strength for a given type resin and filler material.
8. Due to the anisotropy possible with papers and also perhaps to the natural fiber bond produced in paper manufacture, paper base laminates will give at least as high strength and moduli values for their weight as any type of filled plastics thus far developed.
9. From the cost standpoint paper and paper-like materials seem to provide the lowest cost filler which will give the desired strength properties. Recent developments in the production

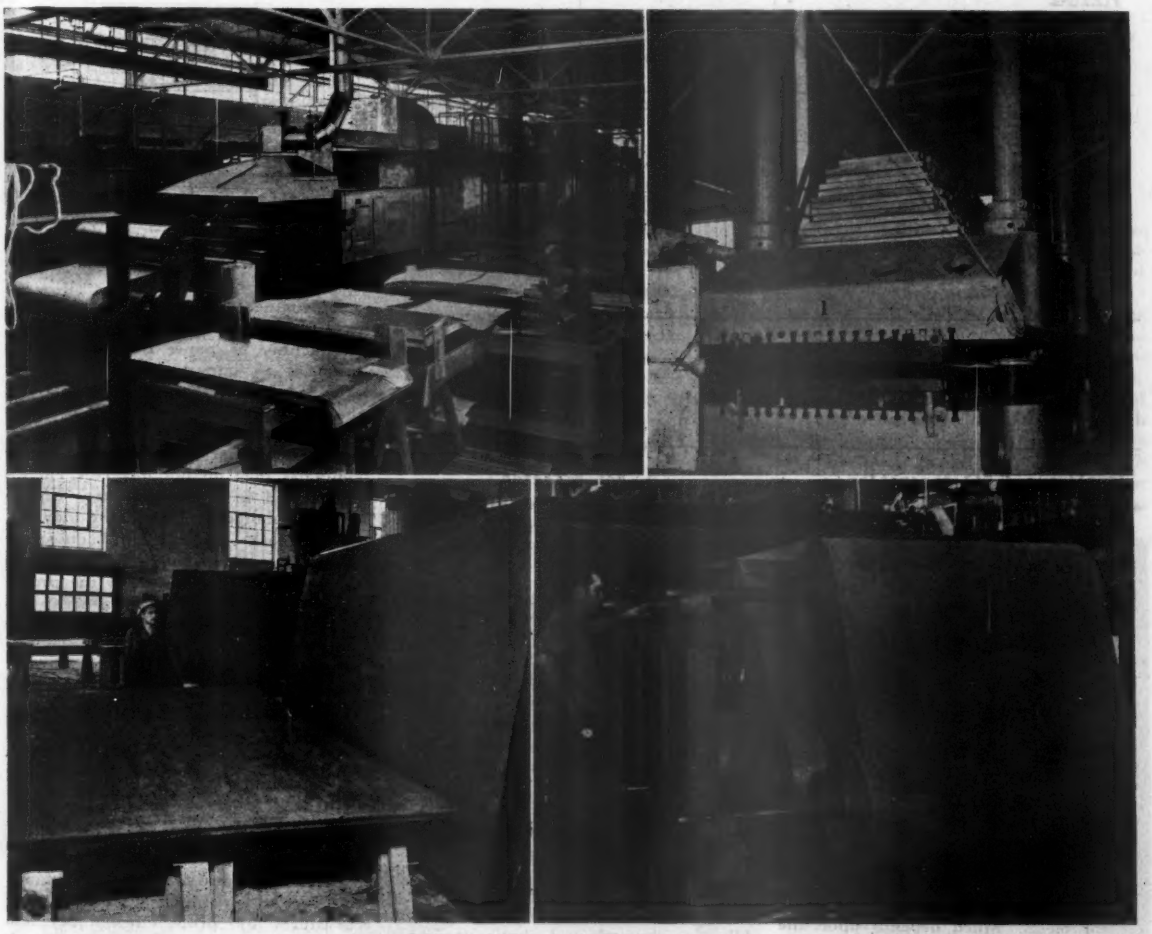
of very highly anisotropic mats made up from very long natural fibers promise to result in exceptional strength at costs somewhat higher than paper but still substantially lower than cloth.

10. For many applications specific gravities lower than the usual 1.3 to 1.4 of laminates are desirable in a structural material. The greatly increased use of "sandwich" type construction to achieve .25 to .35 overall specific gravities is to be expected.

Molding and Tooling

● From the production standpoint a number of conclusions may be drawn regarding molding and tooling procedures in the manufacture of high strength laminates:

1. Low molding pressures of 250 p.s.i. or less permit the use of "soft" metal dies which are cheap to cast and finsh and which may be put into use in a relatively short time.
2. Low molding pressures reduce or eliminate the need for large, heavy duty press equipment and hence the capital investment ordinarily put into such equipment may be saved or utilized for rounding out the range of plastics manufacturing facilities required.
3. Cast Kirksite dies are satisfactory and relatively inexpensive for limited production runs. They should be plated if more than 300 to 400 parts are to be produced.
4. As would be expected, plated cast steel dies are justified if production exceeds 2500 to 3000 parts.
5. Sprayed metal and plated dies can be used with limitations which are primarily imposed by the shape of the part and the details of die construction inherent with the shape. This type of die should not be used at pressures exceeding 200 p.s.i. unless the parts being molded are relatively "flat."
6. Any normal die set utilizing a rubber membrane (as in bag molding) or a rubber pad is likely to be unsatisfactory because of the "roughness" of the molding on the side of the rubber. This roughness somewhat reduces the strength of the part and is, of course, definitely detrimental when areodynamic contours are to be maintained. This does not apply to resin bonded molded plywood.
7. Because of the lack of "stretch" in the dense, impregnated high strength papers it is necessary to "tailor" the build-ups carefully to insure good moldings. While tailoring is usually a hit-or-miss proposition practically all build-ups can and should be developed on the drafting board. This saves much time in the shop.



EQUIPMENT FOR MANUFACTURE OF LAMINATE STOCK AT THE CONSOLIDATED WATER POWER & PAPER CO., Wisconsin Rapids, Wis. It is marketed to plastics manufacturers.

Upper left—An 80 in.-width roll of high strength paper made from Mitscherlich sulphite pulp, being fed into a giant treating machine.

Upper right—Mammoth press used in the manufacture of large Consoweld panels. Capacity of this press is a 72" by 192" panel.

Lower left—72" by 192" Consoweld panels used in the flooring of the big C-87 express plane manufactured by Consolidated—Vultee Aircraft Corp.

Lower right—Roll stock being cut into sheets five at a time in order to insure uniformity of weight and thickness of completed mats.

TABLE I

ENGINEERING PROPERTIES OF LAMINATED CONSOWELD

	TYPE I Cross Laminated	TYPE II Parallel Laminated
SPECIFIC GRAVITY	1.38	1.38
TENSION		
Ultimate, PSI	26,000	36,000
Elastic Modulus, PSI	2,300,000	3,000,000
COMPRESSION		
Ultimate, PSI	18,000	19,000
Elastic Modulus, PSI	2,200,000	3,000,000
FLEXURE		
Modulus of Rupture, PSI	26,000	36,000
Elastic Modulus, PSI	2,000,000	3,000,000
SHEAR		
Edgewise PSI	14,000	15,000
Flatwise, PSI	14,000	15,000
BEARING		
Edgewise, PSI	30,000	30,000
WATER ABSORPTION		
1/8" x 2" x 2" (unsealed edges)	2 - 3¼%	
1/8" x 2" x 2" (sealed edges)	1 - 1½%	
Gasoline and Oil Absorption	Not affected	

NOTES (1) The above values may be used for design
(2) All values except Bearing in accordance with Fed. Spec. L-P-406.

8. The increased application of "contact pressure" resins coupled with decreased curing cycles and the further development and availability of high frequency heating will undoubtedly result in the use of plaster and plastic dies for certain types of jobs.

9. Developments in low cost molding methods must be continued and it may be expected that, for comparable items in metal and plastic, the tooling for plastics will ultimately be as cheap or cheaper than the tooling for metal. Much depends upon the further development of plastic materials themselves and the care with which dies are designed and production planned.

10. In considering the design of a plastic unit the temptation to try to mold it in a single piece must often be resisted. It is often less expensive to make several separate moldings and then to assemble them by bonding or by mechanical fasteners. Initial production deliveries can often be expedited by the assembly method of fabrication because molding problems are simplified and dies more quickly produced.

The mechanical characteristics and advantages of high strength plastic materials in general have been adequately discussed previously. Very recent data are presented in Table I showing some of the engineering properties of low pressure paper base laminates. It is interesting to compare these strength values with those advertised for commercial paper base laminates of three or four years ago. Ultimate strength and elastic properties have been doubled or trebled in most instances.

Future Improvements

While it is usually hazardous to predict material developments and advances, there is good reason to believe that improvements in laminates during the next five years will result in ultimate tensile values of 40,000 p.s.i. in cross laminated materials and 60,000 p.s.i. in parallel laminated materials with elastic moduli of 4×10^6 and 6×10^6 respectively. Shear, bearing, compression, flexure, etc. values may be expected to show proportional increases. Development work on Consoweld is continuing in anticipation of future needs.

Table II gives a comparison between some basic strength properties of high strength paper bases laminates and a number of the most commonly used structural materials on a specific or common weight basis. This comparison was made in the following manner:

1. Specific ultimate tensile strength, ultimate compressive strength, modulus of rupture, and specific elastic moduli in tension and compression are $=$ $\dfrac{\text{absolute value}}{\text{specific Gravity}}$
2. Specific modulus in flexure $=$ $\dfrac{\text{flexure elastic modulus}}{(\text{specific gravity})^3}$
3. Modulus of rupture $=$ $\dfrac{\text{flexural strength}}{(\text{specific gravity})^2}$

A comparison of the buckling stability of flat panels in compression yields vaules very similar to those indicated in the last column of Table II. The values given for Consoweld in Table II are based on a large number of tests and are somewhat higher than the design values shown in Table I.

To engineers and production men used to working with metals the relative lack of ductility of paper base plastics appears as an important obstacle to the extended use of these materials. While the high strength laminates have appreciably better elongation properties than commercial grades of paper base laminates they do not have the elongation found in cloth laminates. Studies of actual design problems have indicated that this lack of ductility and consequent lack of stress distribution in bolted connections can be overcome by the proper design of fittings where concentrated loads are imposed. Furthermore studies of fibers and resins and their combinations in laminates also indicate that very appreciable increases in ductility are possible without appreciable loss in the good strength and modulus properties of these materials.

Post forming and hot forming of laminates have been developed to a science on the West Coast, particularly as regards to the forming of fabric base materials. The high strength paper base materials can also be post formed and hot formed to simple and compound curvatures by proper techniques and some vital paper base war products which were shaped by this process have already seen combat service.

Necessary Research

● In connection with the solution of the problems of further increased strength, elastic modulus, forming qualities, molding qualities, toughness, and decreased material cost a number of items in connection with aligned fiber laminates de-

TABLE II

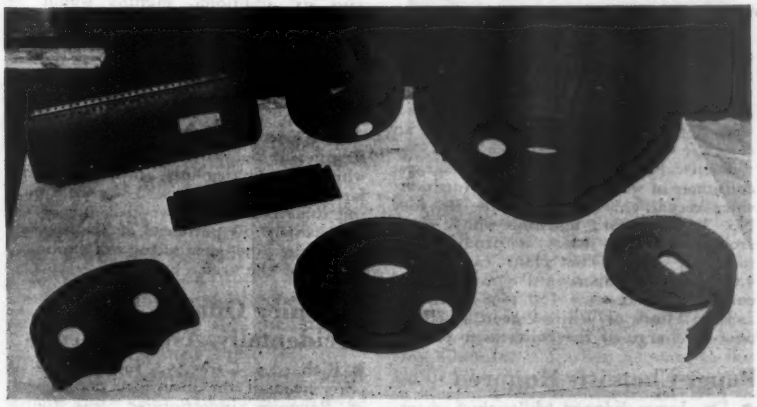
SPECIFIC(a) STRENGTH PROPERTIES

Material	Specific Gravity	Tension Ultimate	Tension Elastic Modulus (x 10^6)	Compression Ultimate	Compression Elastic Modulus (x 10^6)	Flexure Modulus of Rupture	Flexure Elastic Modulus (x 10^6)
18-8 Steel (b)	7.85	23,600	3.57	23,600	3.57	3,000	.058
Al alloy (24S-T) (b)	2.8	23,200	3.68	23,200	3.68	8,300	.469
Mg alloy (J-1h) (b)	1.8	25,000	3.61	25,000	3.61	13,900	1.12
Consowald Type I (c)	1.38	22,000	1.60	16,000	1.60	15,700	0.76
Consowald Type II (d)	1.38	29,000	2.39	16,000	2.39	21,000	1.14
Plywood (e)	.56	14,000	2.04	-	-	36,500	6.3

(a) See definitions
(b) Based on values in ANC-5 Handbook, "Strength of Aircraft Elements."
(c) Cross Laminated.
(d) Parallel Laminated. Values are parallel to grain.
(e) Three ply .070" mahogany - poplar - mahogany. Values are parallel to face grain.

mand further study and investigation. This is necessary in order that the full advantages of this type of material will be fully realized. Some of the work which is required is listed as follows:

1. Detailed studies should be made of the relationship between fiber length, fiber strength, fiber alignment, fiber straightness, and the effectiveness of various types of resins as bonding agents in laminates must be extended to include a wider range of fibrous materials and resins.
2. Work with lignin enriched resins should be expanded with a view to decreasing resin costs which now represent by far the largest percentage of the material cost in paper base plastics. The total cost of the raw materials must be reduced very appreciably if plastic materials are to compete with metals on a really large scale in the postwar period.
3. Further improvements in bonding and impregnating characteristics of resins are desirable in order to provide even better edgewise compression strength and to enable the full strength of the fibers to be developed in tension. Alternatively, to improving the bonding strength of the resins, longer fibers must be used to reduce the unit shear stress on the bond between two joined fibers. When longer fibers are used, proper means of aligning them must be devised.
4. The relationships between molding pressure, molding temperature, and curing cycle for thermosetting resins should also be even more fully investigated to determine the effect of these variables on various strength properties, elongation and mositure absorption characteristics. Little such data has been officially published for general guidance and the establish-



HERE ARE SHOWN PLASTIC PRODUCTS manufactured by McDonnell Aircraft Corp., St. Louis, from the laminated paper supplied by CONSOLIDATED WATER POWER & PAPER CO., Wisconsin Rapids, Wis.

At left are shown plastic assemblies for airplanes. Note plane seat and gun shields. At right, plastic ammunition box, which saves weight and is cheaper than the older type steel box and is also declared more satisfactory than the original.

L. H. Ritter, engineer, Plastics Division, McDonnell Corp., says the high strength spruce sulphite paper laminates, impregnated with only 35 per cent resin, are molded at about 300 degrees and under 250 lbs. psi pressure. He predicts diversified postwar uses.

ment of specifications.

5. Research in resins must be undertaken to improve the ductility and elongation of thermosetting and semi-thermosetting types. By improving these properties the industrial application of laminates will be greatly expanded by improving the post-forming qualities of the materials and by increasing the joint efficiencies possible in bolted and riveted connections.

While past applications of plastics have been largely confined to the electrical or decorative fields, the development of high strength types having the properties given in Table I open new fields for synthetic materials.

Comparison between aluminum alloy and plastic monocoque type primary aircraft structures designed for identical use and to the same load factors definitely indicates that plastic structures can be designed which will meet the weight restrictions and strength requirements. At the same time appreciable structural simplifications will result. By initially designing aircraft for plastic construction, just as most aircraft are now designed for metal construction, it may be expected that further simplification and weight reduction will be achieved.

Aerodynamic considerations also favor low density materials. Airfoil contours must be accurately maintained for all normal flight conditions on high speed airplanes and on helicopter rotor blades which usually operate at high velocities. The low density of plastics permits the use of relatively heavy gauges which can be designed to be free of wrinkles at high load factors. Furthermore, the heavier gauges make it easier to recess mechanical attachments when these are required. Bonded joints may be employed to eliminate a majority of the rivets, bolts, and screws usually necessary in the metal construction.

A further advantage of plastic materials is their inherently low heat conductivity which may be used to some advantage by reducing cabin heating requirements in high altitude airplanes. Recent developments in sandwich construction, which has exceptionally good insulating properties, make it possible to provide insulation and structure simultaneously, further increasing simplicity and reducing weight. Aircraft uses of high strength plastics is but one of many industrial applications envisioned for these materials. Made up into standard structural shapes, they may find widespread application in the framing of homes where the light weight insulating qualities and ease of erection of wood will be coupled with strength and durability equivalent to steel. Large panels of sandwich type construction may be used for walls and floors where high rigidity and good insulating properties are desired. Standard items such as doors may also be mass produced at low cost. The trend toward plastic automobile bodies initiated by Ford may be expected to continue. Lighter automobiles will be necessary in order to reduce fuel consumption and other operating costs.

Weather resistant molded plastic boats in small sizes are a good possibility for high strength plastics. Home airconditioning, food freezing units, and office furniture are other probable uses. It is likely that the use of plastic materials of all types will only be limited by facilities for producing them and the ingenuity of designers in developing products and the ability of research men to make improvements on present materials.

These men from the Crown Zellerbach Corp. offices in San Francisco are serving in the U. S. Coast Guard's Volunteer Port Security Force. They are (left to right): Seaman 1st Cl. WALTER HOWARD; Cox'n DONALD DYCHE (from Zellerbach Paper Co.; Lieut. (jg) W. B. SANDERS; Seaman 1st Cl. THOMAS L. TASSO, and Seaman 1st Cl. PAUL W. OLSON. Another C-Z man, Seaman 1st Cl. RALPH MOSLANDER, was not present.

Pacific Paperboard to Rebuild; John Hints Joins Staff

●Plans to rebuild the box plant at Pacific Paperboard Co., Longview, Wash., destroyed in a recent fire, are actively under way, with the company holding an option on a building at Arkansas and California streets, Longview, formerly occupied by Montgomery Bros. Foundry. In the interim, crews have been installed in the unused converting plant of Longview Fibre Co., on the invitation of R. S. Wertheimer, vice-president and manager, where interrupted production of converted products is approaching normal output again.

● Difficulties in obtaining machines to replace those lost in the fire are expected by E. E. Flood, president of Pacific Paperboard Co. This may keep the new plant from going into production for months. However, machines in the idle plants or those capable of being rebuilt to meet the company's need, may be procured to reduce the time lag. Greater part of the fire loss, set at $200,000 but covered by insurance, resulted from destruction of machinery. A glue applier valued at $25,000, several other gluers and waxers, and seven printing presses were destroyed, together with $25,000 in stock ready for shipment.

Pacific Paperboard is rated the largest consumer of waste paper in the Northwest since recent christening of the 300-foot No. 3 paperboard machine which came from Waterville, Me. It produces 65 tons per day. The plant capacity is 4,000 tons of paperboard a month, and consumption is some 150 tons daily.

John Hints, of White Pigeon, Mich., is now in charge of the conversion plant.

Paper Chemists Honored

● Dr. James Edward Mills, chief chemist, Sonoco Products Co., paper manufacturers and converters of Hartsville, S. C., has been awarded the Charles H. Herty medal, an annual award of the Georgia Section of the American Chemical Society for outstanding work in chemistry. Dr. Mills has writen numerous publications on molecular attraction and heats of vaporization.

Eastern Interests Acquire Idaho Mill Site

New Eastern interests are scouting Western pulp manufacturing possibilities and have obtained option on a mill site in Idaho.

Harry Younkin of Spokane, acting on behalf of unnamed eastern principals, took the option on properties west of Coeur d'Alene, Idaho, lying between the Ohio Match Co. at Heutter and Rock Springs Health Camp near Ross Point. The site, with Spokane River on the north, comprises 250 acres. It will be used for a pulp mill, Mr. Younkin said.

Robert Lang, owner of the property, retained title to the merchantable timber on the tract, received $25,000 as the option price, and has admittedly been in communication with eastern correspondents. The option, bearing date of May 1, covers a period of one year, with a proviso six additional months would be granted in the event war with Germany does not terminate before Jan. 1, 1945.

Four railroads and two highways are adjacent to the site, with electric power available over the Washington Water Power Co. lines.

The Coeur d'Alene district has ample supplies of pulpwood. Red cedar, red fir, white fir, Englemann spruce, Western larch, Western hemlock, Lodgepole pine and some black cottonwood comprise appromixately 50 per cent of the species, with white pine constituting the dominant species of the area.

Rayonier Official Accidentally Asphyxiated

● Richard J. Carey, 42, for the past 10 years head of the insurance department of Rayonier Incorporated, was found dead in his gas-filled New York apartment July 26. Reports indicate that Mr. Carey's death was accidental, the belief being expressed that he might have caught his clothes on the gas jets, opening them before he retired.

Mr. Carey, a resident of San Francisco was in New York on business for the company.

A Visit to C-Z Mill at Carthage, N. Y.; Black River Industries Now Depend on Canada

OPERATIONS of the National Paper Products Co., at Carthage, N. Y., are conducted under quite different conditions than those of the other units of the Crown Zellerbach Corp. But on a recent visit to this 75-ton-a-day tissue and towel mill by a representative of Pacific PULP & PAPER INDUSTRY, it was observed that manpower and wood were the critical problems there just as they are in other regions.

Situated on the Black River, about 30 miles east of the eastern end of Lake Ontario, the Carthage mill is in the heart of an historic pulp and paper industry region. This region has substantial waterpower, large supplies of limestone and, as a great dairy center, it offers, normally, an abundance of casein for paper coatings. Of course, spruce from the Adirondack Mountains was the great source of supply for the industry.

Today, practically all the wood must come in from Canada. The Carthage mill obtains about 60 per cent spruce and 40 per cent balsam in cordwood of four-foot lengths. Like other mills in the region, its wood averages only about eight inches in diameter. In the more recent years, bigger stuff from the Adirondacks average 12 inches.

As elsewhere, there has been an average in employment of women in the Carthage mill. Eighty women, in a total payroll of 350, are found in all departments except on the three paper machines. However, in normal times, about 60 women were employed.

Last winter, Carthage had what the local inhabitants call a "mild winter." They only had to dig themselves out of one heavy snowfall. In this upper and interior New York region, cold northern winds come down the broad St. Lawrence Valley and it takes a lot of heat in the mills and homes to keep things comfortable. Winter temperature averages 25 degrees, summer, 65 degrees. Annual precipitation is 38.7 inches.

Bleach Plant Installed

● The mill has been making facial tissues since 1941 when a 40-ton two-stage bleach plant and a Fourdrinier facial paper machine were installed.

Two other older machines are much larger. They trim 141 inches and 122 inches.

The four-foot long cordwood is cut in half before feeding to the groundwood machines. There are three electric-driven machines and five driven by water-wheels.

For some years now the Carthage mill has been a stepping stone for advancement of quite a few men from the Port Townsend, Wash., kraft mill of the Crown Zellerbach Corp.

The present resident manager is Ray Schadt, recently honorably discharged as a captain in the U. S. Army Chemical Warfare Division. He succeeded P. T. Sinclair, who left Port Townsend 13 years ago for Carthage and now has returned to the West Coast as assistant manager at the West Linn, Ore., division of Crown Zellerbach Corp.

W. R. Benson, the chief chemist and the son of Dr. H. K. Benson, head of the University of Washington chemistry and chemical engineering departments, is also a Port Townsend graduate. Ronald Stewart Benson, born last September, is the latest addition to the Carthage Benson family.

CAPT. EARL THOMPSON, of the U. S. Army Chemical Warfare Service's Marshall plant at New Martinsville, West Va., recently had a day in Seattle to see old friends again.

Capt. THOMPSON was manager of the Seattle office and the Northwest representative for the Great Western Division, Dow Chemical Co. when he went to the Huntsville, Ala., arsenal for the army in March, 1942. He was transferred to the Marshall chemical plant in January 1943.

Capt. THOMPSON headed Dow's Northwest activities since that company merged several years ago with the Great Western Electro-Chemical Co. He has been with Great Western since 1930 and before that was with Crown Zellerbach Corp. at Camas, Wash.

G. F. Loftus, office manager, came from Port Townsend in 1935 and G. W. Beal, the master mechanic, is from the Crown Zellerbach newsprint mill at Port Angeles, Wash.

In the past there have been others from Port Townsend. Al Layton, now a vice president of Crown Zellerbach Corp., on leave in the U. S. Navy, was manager at Port Townsend and later at Carthage. Prior to Pete Sinclair's assumption of the managership at Carthage, C. A. Grondona, another ex-Port Townsendite, had charge there and now represents the company in New York City. The late Bill English and a number of others made the 3,000-mile jump from the extreme northwest of the United States to northern New York in the past.

Tissue and toweling and the other specialties of this mill, including folded products, are all in extremely critical demand these days. Army and Navy orders form a large part of the production. As is commonly the case nowadays in tissue and towel mills, the name of the producing company does not usually go on products which go directly to military forces for their use. In such cases, Carthage is doing its bit anonymously to aid in the war effort.

There are three other paper mills in the quaint little community of Carthage and others in Watertown and other nearby towns. These are old mill towns where generations of families have made paper. These old families give the industry an intelligent, thrifty and dependable type of employe—typical of upper New York and New England regions.

Fred Enders Visits Mills

● Fred Enders, of New York, president, Bulkley, Dunton Pulp Co., was a visitor on the west coast during July, visiting industry centers and some of the principal mills of the region.

Union Bag Expansion

● Contract for design and construction of a new high pressure steam plant, new power generating station and other auxiliary work for Union Bag and Paper Corp. at Savannah, Ga., has been awarded The Rust Engineering Co. The project is valued at approximately $1,500,000.

Seid Is Honored

● John J Seid, traffic manager, Crown Zellerbach Corp., San Francisco, was recently presented with his 30-year service pin by Louis Bloch, chairman of the board.

Bartsch Names Five Objectives For Rayonier's Management and Employes

SERVICE PIN WINNERS AND GUESTS of the Port Angeles, Wash., Division of Rayonier Incorporated. Head table (left to right): J. W. Bagwill, Labor Relations Manager for the company's Northwest mills; C. H. Young, Carpenter on leave of absence in U. S. Navy Seabees; H. A. Sprague, Assistant Resident Manager; Morton B. Houston, Vice President of Rayonier Incorporated; W. E. Breitenbach, Resident Manager; William Snyder, Chief Forester; Ray Dupuis, Resident Manager of the Port Angeles Division of Crown Zellerbach Corp.; Paul Eliel, Labor Relations Advisor for the Rayonier mills, and Jack Henson, Port Angeles Evening News.

Standing (left to right): F. J. Murray, M. L. King, R. L. Anderson, Frank Parkes, C. T. Mulledy, M. A. Adolphson, A. E. Ross, Eugene Reed, Meder Johnson, Herbert Shane, Tony Sofie, H. E. Sherman and S. W. Grimes.
Left side of left table (left to right): J. F. Resch, George Gouker, H. T. Fretz, B. E. Anderson, Glenn Simkins and Don Lawson.

Right side of left table (left to right): A. B. Bushre, Cliff Bena, C. K. Knapman, Patrick Cannon, John Wolz, J. L. Ross.

Left side of center table (left to right): L. E. Miller, F. E. Gossard, G. H. Stokes, G. L. Johnston, M. A. Scott and E. A. Carlson.

Right side of center table (left to right): F. E. Devlin, M. A. Turco, Clarence Byrd, P. F. Kirchner, R. T. Hulse, Peter Olsen, E. A. Berry, Otto Frame, E. I. O'Neill and J. H. Anderson.
Left side of right table (left to right): E. J. Neske, J. H. Schenefeld, Eskel Seastrom, Eric Seastrom, P. E. Reule, G. R. Brisbin, L. E. Hudson, F. R. Phillips, A. B. Sunde, Frank Salo and G. J. Cleary.

Right side of right table (left to right): J. G. Hardy, G. E. Wallis, Henry Fey, E. J. Jarvis, Harry Scott, F. C. Denny W. V. Nelson, C. R. Harbison and L. H. Burns.

● President Edward Bartsch of Rayonier Incorporated, in a message to a recent service pin dinner for employes of the Port Angeles, Wash., division of the company, outlined a five-point credo and program.

The five points, on each of which he has laid great stress since he became president of the dissolving pulp manufacturing firm last January 27, follow:

1. Understanding and teamwork, as between management and employes.
2. Continued research.
3. Up-to-date merchandising methods.
4. Understanding of our customers' problems.
5. Goodwill of our stockholders.

Service pins for five to 15 year's service were presented to 104 employes at the dinner June 29 in the American legion hall in Port Angeles.

W. E. Breitenbach, resident manager of the mill, presented pins to 103 employes after an address in which he praised the efforts of the employees for making possible production records during these times of many unusual operating difficulties. He explained that the Port Angeles plant was wholly engaged in producing materials for military and essential civilian use.

Then Mr. Breitenbach himself received a 15-year pin from Morton B. Houston, of Seattle, vice president and Pacific Northwest representative of Rayonier.

William B. Snyder, chief forester, said Rayonier has acquired timber on the Olympic Peninsula, which, barring accident, "will yield a perpetual supply of timber to insure the operation of the Rayonier plant here forever."

He referred to several logging stands opened up in the past two years for the Port Angeles mill. A half dozen other operations also were acquired for the Grays Harbor division in that area of western Washington.

Mr. Snyder pointed out that abundant rainfall in the area would provide new growth each year from holdings of old growth, intermediate growth, escond growth and newly logged-off lands.

Mr. Bartsch's Message

● Mr. Bartsch came from New York headquarters to visit the Northwest operations early in August. His message, read at the dinner by Mr. Breitenbach, expressed regret at being absent at that time because of the pressure of business in the east.

"One of my keenest desires is to create a new high in understanding and teamwork—to develop a friendliness, unity and family spirit within the company," said Mr. Bartsch.

"Our whole future rests upon harmonious and effective cooperation. You and I, working together, have it within our power to provide the answer to the future. This is our company, our work, our job, our future and the fulfillment of our finer desires must be built upon sound, realistic and cleancut principles."

He said the company "anticipates" the day when former employes in armed services will return to their jobs.

He foresaw "unlimited possibilities" for Rayonier products—rayon, cellophane and paper pulps—and said "we have an opportunity not only to benefit mankind through many and varied uses of our pulps but to create new job opportunities."

Present at the dinner was Paul Eliel, of Stanford University Gradute School of Business, Palo Alto, Calif., and chairman of the Pacific Coast Maritime Industry Board, War Shipping Administration, who on May 1 was appointed by Mr. Bartsch to be labor relations advisor for the Pacific Northwest mills.

John W. Bagwill, who became labor relations manager for the three mills on the same date, also was present from Hoquiam, Wash.

Another guest was Raymond A. Dupuis, resident mamnager, Port Angeles, Wash., division of Crown Zellerbach Corp.

Fifteen-year pin awards went to Mr. Breitenbach; S. W. Grimes, personnel manager; J. G. Hardy, pulp mill superintendent; Patrick Cannon, steam house superintendent; Otto Frame, pulp machine room superintendent, and Frank

E. Devlin, a recent transfer from Rayonier's Shelton Division.

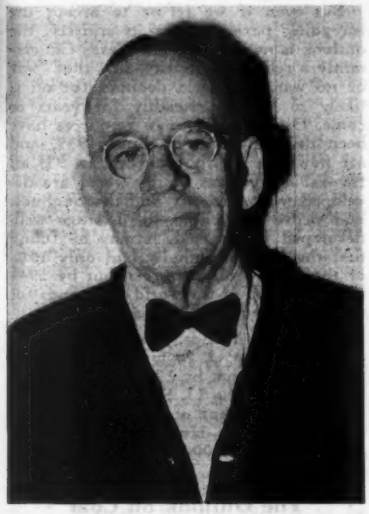
Twenty-one awards went to men now in armed services and were presented formally to Seabee George Young, present at the mill on furlough.

Key supervisors well known on the coast who were included among 45 recipients of 10-year pins were Meder Johnson, resident engineer, and Fred A. Radke, shift superintendent.

Trig Iverson Lost In River Accident

● Trig Iverson, for many years superintendent at Sorg Pulp Co.'s plant at Port Mellon, B. C., disappeared and was presumably drowned early in August when he accidentally fell from a raft of logs in the Homalko river.

Iverson disappeared after the raft struck a rock in the river and his two companions did not realize that he was gone until some minutes later. A search failed to find any trace of him.



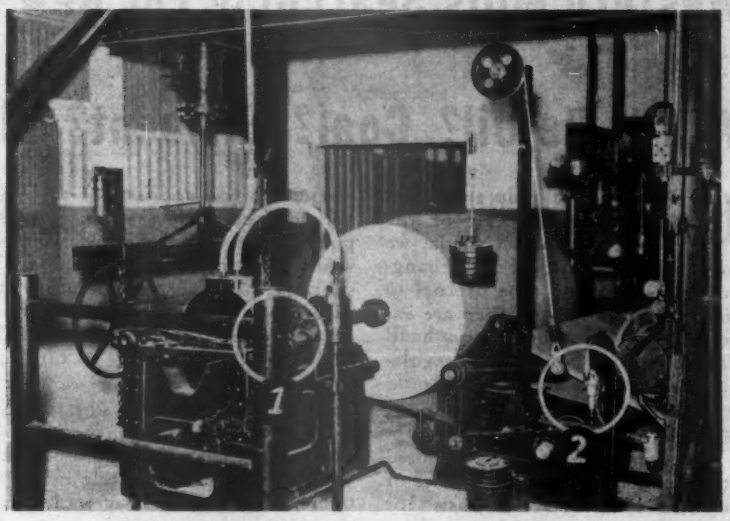
FRANCIS WILLIAM (Frank) MONAHAN, General Superintendent, St. Helens Pulp & Paper Co., who has received the high honor of a life membership in the American Pulp & Paper Mill Supts. Assn.

Mr. MONAHAN is also a charter member of the association, joining in 1919 with Fred Boyce, Paul Smith, W. A. Kelly, and others of the original group.

Born in Alpena, Mich., in 1891, Mr. MONAHAN first worked for Fletcher Paper Co., then for both the Wasau Sulphite Fiber Co. and Wausau Sulphate Fiber Co., for Bagley & Sewall Co., Fox Paper Co. and Advance Bag & Paper Co., in order, before coming west. Since 1914 he has been a superintendent and in 1919 he claims to have directed the first machine making paper at 1,000 ft. per min.

He was general superintendent of three Fox mills in Ohio from 1923-6 before going to Louisiana to start up what then was the largest kraft machine in the world for Advance. At 63, he is hale and hearty, but already has a farm and orchard at Hood River, Ore., where he plans eventually to retire.

Tension Control at Longview Fibre Co. Produces Higher Uniformity in Quality



THIS SHOWS THE TWO PARTS OF THE CAMERON TENSION CONTROL installed on a machine at Longview Fibre Co., Longview, Wash. The parts are: (1) The diaphragm, in view behind the post, and (2) the automatic control valve.

● Two complimentary devices which maintain uniform pull on a paper roll as it speeds through a machine at the rate of 900 feet per minute have recently been installed at Longview Fibre Co., Longview, Wash.

The parts were installed at either end of an asphalt machine by Joe Scheuermann, western sales manager, and Tom Carter, service engineer, of Cameron Machine Co., Brooklyn, N. Y. (Their office is in Chicago).

The devices work automatically on a free or tension roll between the operating machine and the mill roll from which the paper is unwound at one end and wound at the other end of the laminating machine.

The first part consists of a mechanism set in connection with the tension roll to transmit its movement instantly to the automatic control through diaphragm valves and air lines. A weight, hung over a pulley on an overhanging arm, serves as a counter-balance only. These weights are subject to alteration, depending on the situation to be met. They govern the amount of tension on the mill roll.

The second device consists of the braking mechanism.

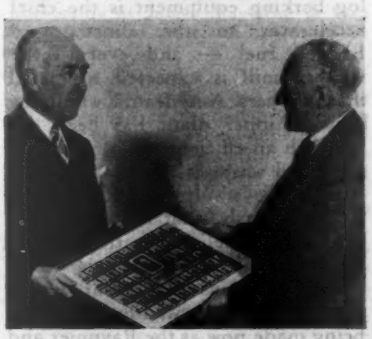
Actually the Cameron tensioner, when the machine is in operation at a high rate of footage per minute, has all the good features of a fixed roll in that it tends to retain a fixed position, and all the good features of a loose roll in that it allows for every variation in the fast moving sheet. For, as the roll moves forward more air is automatically fed to the brake, and as the roll moves back the air fed to the brake diminishes. This gives variable allowance, but maintains steady pressure which results in more uniformity.

Compressed air fed through the diaphragm valve governs the amount of braking, subject to the automatic control of the diaphragm valve itself, which draws its activation from a cam set ahead of the automatic valve, which is regulated from the tension roll movement.

According to statements made at Longview Fibre Co., the Cameron tension control assists the operator to maintain a proper weight of asphalt at all times and to produce high uniformity in quality. Further, it permits the use of rolls which may have gone out of round through rough handling — "yamhill rolls"—and thus lessens replacement costs. Cliff Page has charge of this department.

All engineering work, development and perfection of this control device was accomplished by Mr. Scheuermann and Mr. Carter. First installation was made at the Soundview Pulp Company, Everett, Wash. (The Longview Fibre installation was made in April, during a later trip west by Mr. Scheuermann and Mr. Carter.)

Ed Tidland, manager of the Pacific Coast Supply Co., Public Service Bldg., Portland, Ore., represents Cameron Machine Co. on the Pacific Coast.



AT POWELL RIVER 25-YEAR CLUB inauguration, H. S. FOLEY (left), President, was presented the framed photo group of the members by JOHN McINTYRE, Public Relations.

DIMINISHING HOGGED FUEL SUPPLIES START
Western Mills Searching For New Sources of Power

* * * *

Will It Be Oil? Coal? Effluent? Electric Boilers?

IN DIFFERENT pulp and paper manufacturing areas of the United States and Canada, we have received reports of mills changing over from one type of fuel to another. In some cases they are experimenting. In others their hand was forced by government regulations and restrictions. So, in all pulp regions, the problem of fuel is of great concern.

Throughout far western United States and Canada, hogged fuel of sawmills has been the basis for cheap steam power in the wood industries.

It has served well the western pulp and paper manufacturing industries. The supply was as endless as the raw materials of the industry, because this fuel was in fact a part of those raw materials.

That time is gone — it is gone now.

The supply of hogged fuel is fast dwindling. Some see evidences that it will no longer be available (except perhaps to small, isolated operations) in from two to three years.

The search for new forms of fuel, new sources of power, is already on. Many industries, particularly the pulp and paper and wood industries, find themselves on the threshold of being, quite literally, powerless to turn a wheel.

Barkers Ading to Shortage

● The development of hydraulic log barking equipment is the chief accelerator to the shortage of hogged fuel — and every large western mill is expected to install these barkers. A hydraulic whole log barker-chipper plant has been doing such an efficient job of eliminating wood waste at the Weyerhauser Timber Co.'s sulphite pulp mill at Everett, Wash., that its own supply of hogged fuel is greatly lowered and this will be true in every mill where similar installations are made. These include installations made, or being made now at the Rayonier and Crown Zellerbach mills on the Olympic Peninsula of Washington State.

When a government agency representative was apprised of the log barker installations, and it was pointed out that these installations would contribute to hogged fuel shortage, his reply was the acme of theoretical simplicity. "If they are going to destroy their own wood fuel, then they will have to turn to something else," he said.

"Destroy," indeed! The whole idea of log barkers is the more complete utilization of wood resources. They were made inevitable by wartime manpower shortages, higher taxation, higher material costs, and fewer available new stands of timber. It is reliably estimated that the barking of logs will extend our pulp wood resources 20 to 30 per cent.

And as for turning to "something else" for fuel — to what shall these industries turn?

To oil?

To sulphite pulp mill effluent?

To electric steam boilers?

To coal?

— or to what?

It sounds easy — on paper. There has always been the school of thought which maintains with casual nonchalance that when one natural resource runs out, American ingenuity would find another to take its place. Possibly. But this problem is here now. The power balance of many a pulp and paper mill is right now being seriously jarred out of balance.

Where do we go from here on the question of power for these industries? Nobody has all the answers. Even if we collected here the answers available, the problem would be short of solution.

But certainly it is time to look at the questions.

What About Oil?

● There is a widely prevalent view that, once the war is over, fuel oil will be plentiful again.

The oil companies, who should know, do not seem to think so. Their entry into the field of chemistry — in short, to creating oil synthetically — indicates they are not crying "Wolf!" for the fun of it.

The present success of our seven-ocean Navy suggests that the very greater part of it is going to be definitely afloat at the close of the war. It may well be one of the potent international peace-maintaining factors in the postwar years. Merchant shipping has its plans in readiness. Both huge fleets are going to use oil, perhaps in quantities as great as now. Too, the growth of aviation must be considered. As for shore activities, informed sources appear to believe that domestic dwellings will get first call on fuel oil, and that industry must look to other sources of power.

But even if we refuse to accept the foregoing paragraph in its entirety, the outlook is not bright. The Texas Co. certainly a reliable authority, says that "war or no war, the world demand for oil is likely to increase steadily for years to come. Discoveries of new resources have been declining steadily since 1939, and are now more costly than ever . . . If all favorable oil areas in the world are developed with efficiency and thoroughness and prove as rich as the average well-developed U. S. field, it may be found that the U. S. originally had only 15% of the world's oil resources, but by 1944 supplied 60% of the world's demands for crude petroleum up to that time."

From what it finds, the Texas Co. concludes that the U. S. may soon have to import oil — that by 1947 — three years from now — the U. S. will have, not a surplus of oil but a deficit of 600,000 barrels of oil per day. And that this deficit will become 1,000,000 barrels per day in 1948!

The Outlook on Coal

● Many pulp and paper industry engineers on the Pacific Coast have been considering the possibility of coal as a source of steam power. Lately they have been deflected from this line of thinking by several factors—notably a consideration of electric boilers, on which more will be said later in this discussion.

But, say the experts, there are other factors against coal. The U. S. Fuel Administration is now actually denying oil to even highest priority war industries. It had orders to cut oil consumption in Oregon and Washington from 12,000,000 to 7,000,000 barrels. This meant that many plants had to immediately turn to coal—and only 128,000 short tons were mined in the state of Washington in March, 1944. Most of that was mined by the railroad for their own use. Until after the entire Pacific drive is finished, the railroad's demand for coal isn't likely to slacken.

Looking beyond the war, we must still consider that due to topography and the geoglogical structure of the area, the production of coal per man hour in the Pacific Northwest will never be high. It is uncertain as to when the supply of coal miners will again be plentiful, and there is always a labor problem in the industry that makes both supply and cost unpredictable.

There are, to be sure, coal deposits in Alaska and Southwest U. S. But a consideration of that source of supply is simply too far off in the future to be applicable to a problem which faces us right now.

In conversion to coal there must be considered the problems of delivery and disposition of ashes, as well as the cost of converting boilers to stoker or pulverized coal firing.

The use of coal would be highly desirable, for it is a fuel product indigenous to the region. It would seem to be the immediate and local salvation, and those with the interests of Pacific Northwest industry at heart could mightily wish that coal is the solution. But the realities against it are there, and the coal producers themselves, frantically trying to fill even part of the current demand, are the first to admit these realities in connection with coal as a source of steam power for large industries.

Coal and Oil Together?

● In connection with oil and coal, it is to the point to consider colloidal fuels. The burning of a combination of oil and coal in solution has been the subject of some studies, and certain practical applications since World War I. When the U-boat menace was at its height in this conflict, with a resulting serious shortage of fuel oil on the East Coast, the U. S. Bureau of Mines bent efforts toward further research. It was indicated that there was a practical possibility of "coal pulverization to an average fineness of 90 percent through 200-mesh, mixing it with No. 6 oil." The tests were made with mixes from 25 percent to 52 percent coal in the oil. Beyond 42 percent changes in piping and pumping are required, the tests indicated.

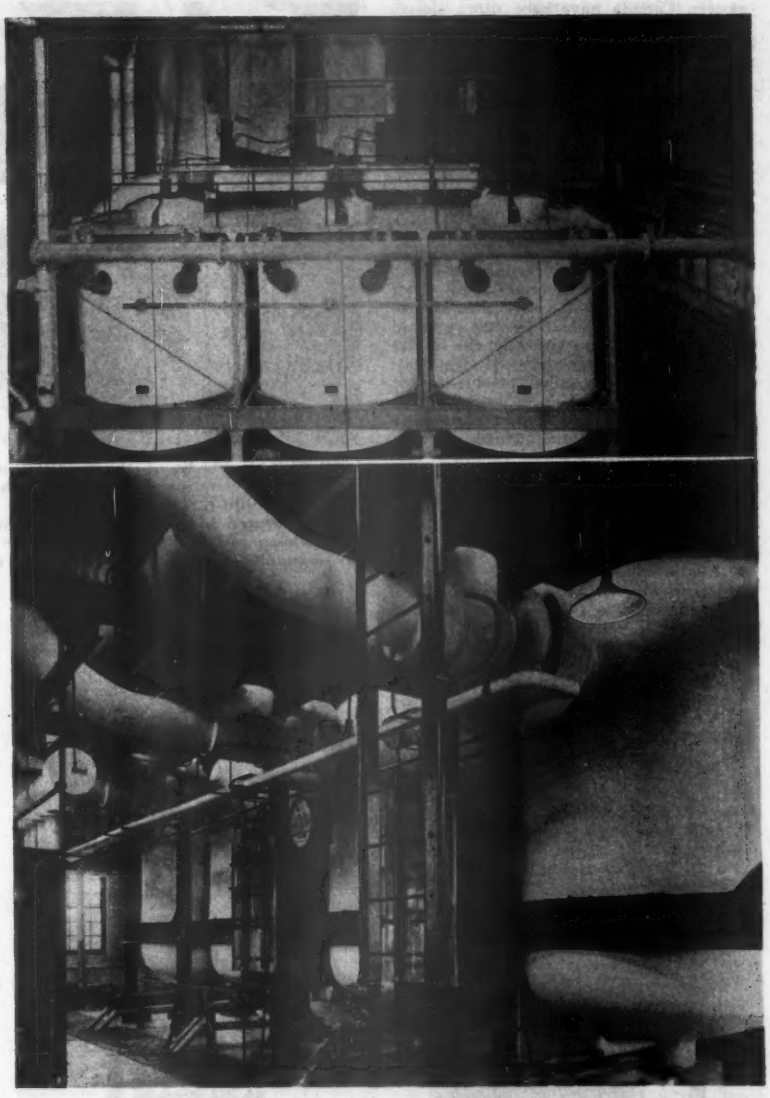
Difficulty is that many plants are not in a position to make a conversion without considerable expenditures. At least one pulp and paper plant (Eastern Corporation, Bangor, Maine) is erecting a mixing plant. With it they expect to reduce their oil consumption from 350,000 barrels annually to about 100,000 barrels. This will not be a complete colloidal plant, however, for the fuel is to be brought directly from the mixing into the boilers.

The end sought is a "free flowing fuel that can be stored in tanks and easily transported—a mixture in which the coal will not settle out and will require no further agitation at the point of consumption. In brief, a homogenized mixture of finely ground coal, and of oil, that is completely satisfactory to industry.

Magnesium Base Cooking

● The pulp industry has been watching keenly an experimental process at the Howard Smith Paper Co in Cornwall, Ontario, to use magnesia base acid instead of the commonly used calcium base in the pulp cooking operation in sulphite mills. It is a process developed simultaneously through the efforts of G. H. Tomlinson, technical director for the Howard Smith organization; the Babcock & Wilcox Co., manufacturers of steam generating equipment; and the pulp division of the Weyerhaeuser Timber Co.

There is a source of power here because "the waste liquor—produced in cooking with magnesia acid, will be evaporated and burned," according to Ray S. Hatch, research director of Weyerhaeuser Timber Co.'s pulp division. He goes on to say, "The magnesia will then be recovered as an ash * * * will be mixed with water and combined with the sulphur dioxide in the combustion gases to re-form a cooking acid. This again will be used for the production of pulp" (from "The Waste Suphite Liquor Problem," by Mr Hatch, in January 1944 issue of Pacific Pulp & Paper Industry).



ELECTRIC STEAM BOILERS IN TWO EASTERN CANADIAN PULP AND PAPER COMPANY PLANTS:

Above—Two 32,000 KW, 114-in., 3-tank electric steam generators, operating at 13,200 volts, shown in the Riverbend, Quebec, mill of Price Bros & Co., Ltd., where sulphite and mechanical pulp are both made.

Below—Four 16,000 KW electric steam generators at James Maclaren & Co., Masson, Que. This firm makes sulphite and mechanical pulp and has two 234-inch newsprint machines producing 700,000 lbs. per day.

There are many important considera tions for the suplhite pulp industry in such a process, but we are concerned here only with fuel. Mr Hatch says: "If we have as a waste product the non-cellulose portion of the wood already isolated, we may utilize this by converting its stored solar energy into a form of energy which we can use, namely: steam and power—and render available more wood for the production of cellulose."

According to experts who are working on the problem there is a very definite indication of great possibilities in the burning of solids from sulphite pulp liquor. It is estimated that in the Puget Sound area alone there could be salvaged nearly 1000 tons of solids daily from the effluent of these mills. The cost, it is claimed, will be acceptable to the mills, and in addition to fuel, it has possibilities in connection with other products—plastics and dyes, to name two that are definitely in this picture.

The Electric Boiler

● It was Columbia River hydro-electric power that brought the thinking of some to the possibility of electric boilers as a solution.

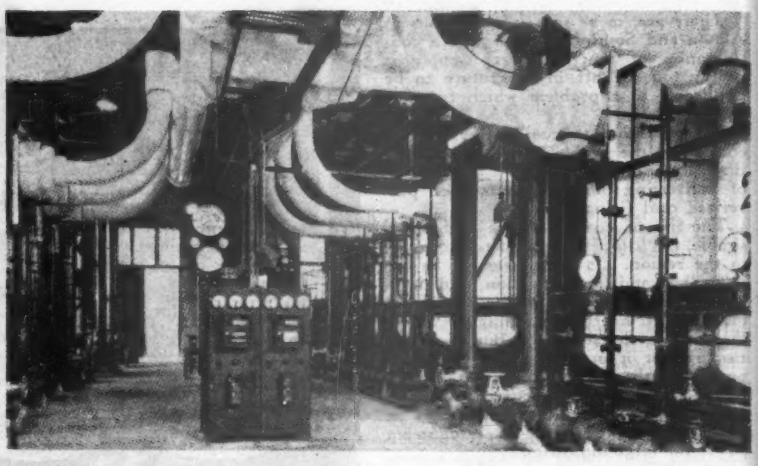
A number of pulp and paper mills in

eastern Canada have been using electric boilers for years and some are shown in accompanying illustrations. There is 980,000 horsepower boiler of this type in an industry in eastern Canada. In western Canada there are installations at the Powell River Company, Ltd., in British Columbia.

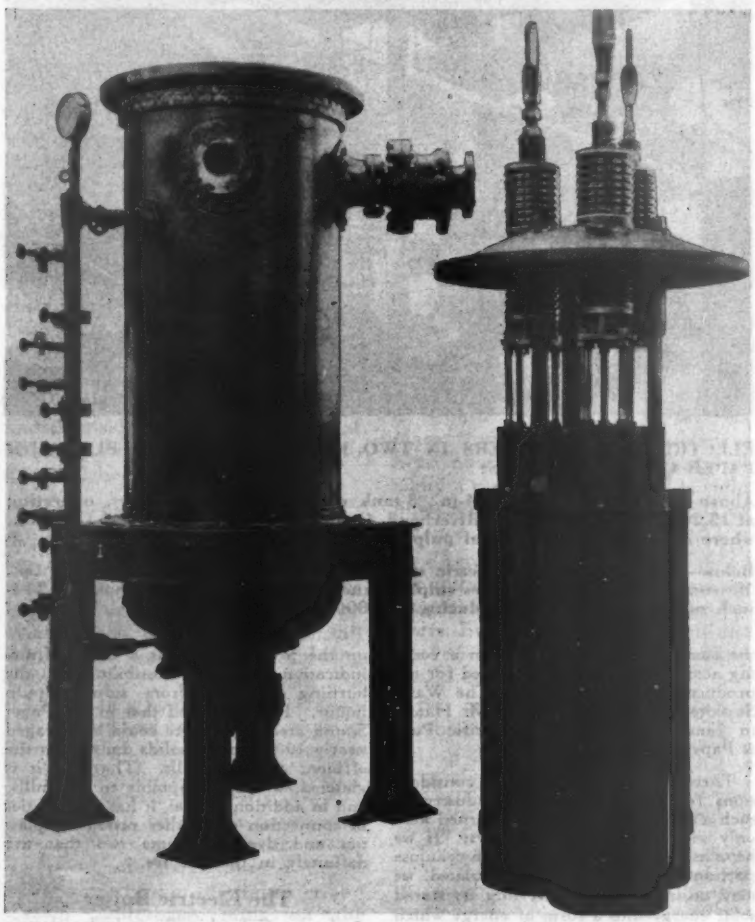
This plant has a 500 hp electric boiler, and one of 600 hp. Last year, as a war measure to conserve fuel oil, it installed a second-hand electric boiler of 2800 hp, rigging it, however, to generate steam only up to 1600 hp. All these boilers are secondary steam generators, and brought into use only when there is an adequate supply of water for their hydro-electric stations. When the mill operated at normal peace-time capacity, the boilers operated only a short period each year. But during the curtailed production of the past two years, the electric boilers have been operating a large percentage of the time and, in consequence, a saving in fuel oil resulted.

Resident Engineer Harold Moorhead at Powell River finds the installations entirely satisfactory, requiring little supervision by the steam plant operators. And the maintenance requirements are said to be insignificant.

Electric boilers were in operation in Europe as early as 1904 in units of small capacity up to 2000 KW. Modern electric boilers range from 50 KW to about 50,000 KW or 5,000 boiler horsepower. Some of the large units are in daily operation, supplying the steam requirements of some of the largest pulp and paper mills in Canada.



A GENERAL VIEW of the installation in the Gatineau, Quebec, Mill of the Canadian International Paper Co., showing four electric steam generators—three of 42,000 K.W. capacity and one of 21,000. This whole installation is normally operated by one operator and supplies the entire steam demand of the mill, where groundwood and sulphite pulp, and newsprint (1,448,000 lbs. a day normally on four machines) are made.



4,000 K.W., 2,200 VOLT ELECTRIC STEAM GENERATOR dismantled for inspection; showing the general simplicity of construction and accessibility of interior parts.

Electric power is a basic necessity for kraft pulp manufacture. For example, The Chesapeake Corp. of Virginia (whose forestry policies are subject of another article in this issue) pioneered in 1925 in construction of a high pressure steam power electric generating plant, resulting in important power cost savings and making the company independent of any threatened power shortages. It is planned to considerably enlarge this plant as soon as war restrictions are relaxed.

In a popular water-resistance type electric steam generator, electrodes are submerged in water, and heat is generated by the passage of current between the electrodes, the water itself forming the resistance. This type is built in three-tank units and in single-tank units. The first consists of three pressure vessels, each having an electrode connected to one phase of a three-phase circuit. The tanks are connected together on the steam side but each has independent feed and bleed control valves.

Generally speaking, to use power which could be sold for any other purpose than to make steam is not commercially practicable. The electric steam generator is admittedly a surplus power proposition.

Three western utilities companies and one pulp and paper company (Port Angeles, Wash., Division of Crown Zellerbach Corp.), are now using electric boilers, operating on dump power only. Whether or not electric boilers will be utilized to take the place of other fuels, in large part or entirely, is dependent upon the relative costs of various fuels as compared with electric power. In Canada, the Hydro Power Commissions of the various provinces have been furnishing secondary power to industry at a very low rate for steam generation—in some instances, as low as ¾-of-a-mill per KWH.

Viewing these facts, some Pacific Northwest industries are looking toward the Bonneville Power Administration for an indication of what rate might be expected for secondary power. True, electric boilers might not be the whole answer. There would always be the factor of the availability of water at the dams,

and such installations would have to be secondary. Nevertheless, electric boilers might be viewed as "extenders" of fuel, and used alternately with other types of power producers.

Views of R. E. Chase

● R. E. Chase of the R. E. Chase & Co., Tacoma Bldg., Tacoma 2, Wash., representing Combustion Engineering Co., has furnished some interesting data on the electric boiler which is pertinent to this discussion. It follows:

"The power cost or alternately the fuel cost is only a part of the total cost of steam. Other items of the cost of steam are obviously interest, depreciation, operation and maintenance. In the case of electric boilers all of these items are much less than in the case of fuel fired boilers. However, let us first develop simple formulae for calculating the power cost of electric steam as compared with the cost of fuel whether wood, coal or oil. The customary unit of steam is 1000 lbs. The heat content of steam depends upon the enthalpy of the steam at the boiler outlet minus the enthalpy of the feedwater entering the boiler. In the following examples we have selected a typical value for enthalpy and have used it throughout. Any different selection would make little change in the results.

"For example, from the steam tables, the enthalpy of saturated steam at 250 lbs. gauge pressure is 1202 Btu, while that of feedwater at 212 F. is 180 Btu. The "change of enthalpy" of 250 lbs. steam from 212 feedwater is therefore 1202 minus 180, or 1022 Btu.

"The generation of steam by electricity is a straight resistance load with 100% power factor and, therefore, by definition, one kwh will generate 3413 Btu.

"The thermal efficiency of an electric boiler with good pure feedwater such as is common in this area, is better than 92%. The only losses are radiation from the comparatively small surface area plus loss in bleed made necessary by the accumulation of soluble salts in the tank. This bleed is ordinarily too small to justify the use of heat exchangers.

"If 'C' equals the power cost of 1000 lbs. of steam, 'H' is enthalpy (1022 Btu), 'E' is efficiency expressed as a decimal, and 'P' is the cost of one kwh ($0.001), the formula becomes:

$$C\ (\text{elec.}) = \frac{1000\,H \times P}{3413 \times E} \text{ or}$$

$$\frac{1000 \times 1022 \times .001}{3413 \times .92} \text{ or } \$0.326$$

"If power were purchased on a demand basis, this result would have to be further divided by load factor expressed as a decimal. But we assume that "secondary" power will be contracted on a straight kwh basis.

"Equally simple formulae can be prepared for the fuel cost of steam generated by oil, coal and wood refuse.

"In the case of oil, 'F' is the cost of fuel per barrel or gallon and Btu is the heat content of the same unit. If we assume the cost of oil (F) is to be $1.35 per bbl. containing 6,450,000 But/bbl and the average boiler efficiency is 75%, we have:

$$C\ (\text{oil}) = \frac{1000\,H \times F}{\text{Btu} \times E} =$$

$$\frac{1000 \times 1022 \times 1.35}{6{,}450{,}000 \times .75} = \$.285$$

"In the case of coal, F is the cost per ton, Btu is the heat content per pound as fired. Suppose 12,000 Btu coal costs $7.00 per ton and can be burned with 70% average Efficiency:

$$C\ (\text{Coal}) = \frac{1000\,H \times F}{2000 \text{ Btu} \times E} =$$

$$\frac{1000 \times 1022 \times 7.00}{2000 \times 12{,}000 \times 0.70} = \$.426$$

"In the case of hogged fuel we have to take into consideration the weight per unit and the Btu per pound of the wet fuel as fired. If a unit costs $.50 and weighs 4500 lbs. with 4450 Btu as fired and is burned with 55% efficiency, we have:

$$C\ (\text{hogged fuel}) = \frac{1000\,H \times F}{\text{Btu} \times E} =$$

$$\frac{1000 \times 1022 \times 0.50}{4500 \times 4450 \times .55} = \$0.046$$

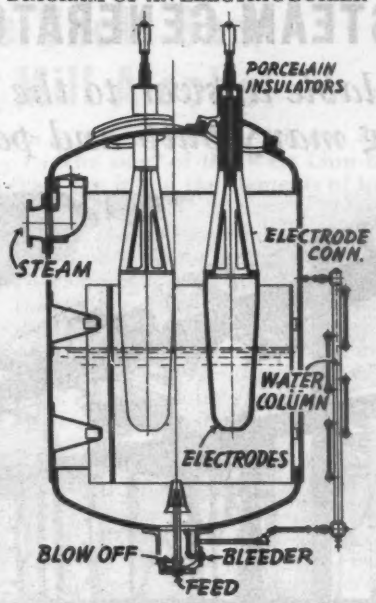
"You can use your own value in these equations and obtain comparative costs of power and fuel which will fit your own case.

"In the foregoing examples it is obvious that one mill power cannot touch the fuel cost of hogged wood at 50c per unit, but is cheaper than coal under the conditions given. To meet oil at $1.35 per bbl., electricity would have to sell for $0.0009 per kwh. However, in certain favored areas and under certain favorable conditions, electric power, we are told, can be purchased at this figure or less.

"Don't lose sight of the fact that oil may not be available for some time at any price and may never again sell at $1.35 per bbl. Also don't forget that coal has to be delivered into bins and the ashes have to be carted away. Likewise, remember soot and cinders and damage they cause. And the cost of converting your boilers to stoker or pulverized coal firing.

"There is another important consideration which might call for electric boilers. Suppose you use considerable process steam and purchase electric power on a demand contract. If your load factor is low it means that you are paying for a lot of power based on your peak demand but not using it! If you installed electric boilers with automatic switches to cut them in whenever your power intake begins to drop below your established peak, all of the power consumed in making electric steam will be free—costing nothing. During the intervals when your power consumption rises to the demand peak (for plant motors, furnaces, etc.) your electric boilers will cut out and your fuel fired boilers (responding to their regular pressure controls) will cut in. Result, a flat power curve—a good load factor—and fuel saving. You will consume all the electric power you pay for. By demonstrating your cooperative effort to conserve fuel, you can go to the fuel administrator with clean hands—and with a good argument for whatever fuel you need. An electric boiler is very small and compact. Installation is very simple. Maintenance and operating costs are almost negligible."

DIAGRAM OF AN ELECTRIC BOILER



Section through a single-tank unit.

The Bonneville Power Administration is now approaching the problem, and its latest publication, **Pacific Northwest Opportunities** indicates that it has not, of course, been unmindful of the possibilities of electric boilers for the generating of steam power. BPA says, "electric boilers are expected to find a permanent place in the industrial steam plants of the Pacific Northwest . . . to the extent that the available blocks of surplus, secondary or dump power will permit." BPA takes cognizance of the "impending shortages of hogged fuel and fuel oil" and notes that the pulp and paper mills tributary to the Bonneville-Grand Coulee system are good prospects for electric boiler installations.

This is true if BPA is able to develop and submit a secondary power rate which will make these systems practical. The pulp industry has already seen the cost of its power jump two and half times the original cost in the area. At 1¼ mill per KWH—somewhat higher than in certain sections of Canada—the cost would be 38c to produce 1000 pounds of steam —50c in reality, counting in overhead items.

What is the present Bonneville situation? The present installed capacities (name plate rating) are 518,400 kw at Bonneville Dam and 798,000 kw at Grand Coulee. As of April, 1944 customers of BPA were taking 1,067,000 kw. Industries were taking 817,000 kw of this, and of the industries the aluminum plants—which may be "war babies" only—were taking 686,000 kw.

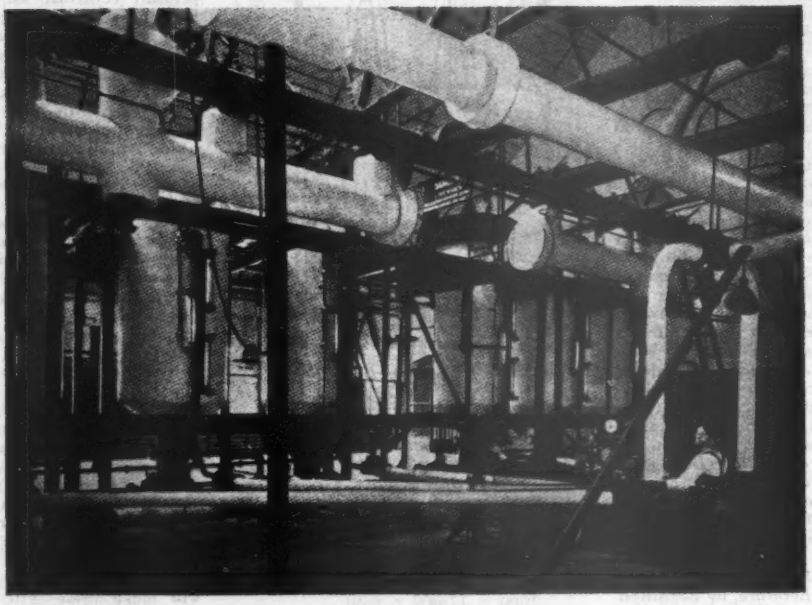
According to BPA officials, the total possible capacity that can be developed on the main stem of the Columbia River, if the eleven-dam proposal is adopted along with certain storage facilities on the tributaries, would be about 10,000,000 kw of firm power. Of this amount, say the officials, Bonneville and Coulee could provide 3,100,000 kw.

BPA is not unmindful that "at least for a temporary period (after the war) a considerable amount of our load may be lost." Quoting further from Dr. W. A. Dittmer, power manager for BPA, "Our efforts are directed toward sale of this power for other purposes, which serve even more directly to develop the area."

Would it not be practical, some western industrialists are asking, in the interim of waiting for prime power users, to meet the urgent cheap power needs of industries already located? True enough that there are Pacific Northwest opportunities for future industries—but here seems to be an opportunity to fulfill a great regional need now, without jeopardizing any part of its constructive basic program.

C-E ELECTRIC STEAM GENERATOR—Kaelin Type

The best available answer to the fuel problem now facing many pulp and paper mills



First large installation of electric steam generators in Canada. These Kaelin Units, with a total capacity of 150,000 lb. of steam per hr., were installed in 1922.

No need to dwell on the fuel situation confronting the pulp and paper industry in the Northwest. The growing seriousness of it and the fact that it will remain for a long time are all too evident.

For many plants the best and perhaps the only solution is the installation of electric steam generators. Where an excess of hydro-electric power is available and current can be purchased at a low rate, the cost of electrically generated steam will not be much if any more than that of steam generated by coal or oil at present prices in the Northwest. In all other respects — fixed charges, maintenance, operating and labor costs—electrically generated steam is much cheaper. Furthermore, there are advantages of space saving, convenience, flexibility and simplicity which are not obtainable with any other type of steam generating unit.

The Kaelin Type Unit offered by Combustion Engineering is by far the most widely used design on the market. In Canada, where an abundance of cheap hydro-electric power is available and electric boilers are widely used, Kaelin Type Units account for over 80 per cent of the total installed capacity. The majority of these installations are in pulp and paper plants, many of them with service records of fifteen to twenty years. Kaelin Units have also been installed by Combustion Engineering in various parts of the United States, including the Northwest where installations have been in service for periods of more than 10 years.

Right now we have inquiries from Pacific Coast mills for Kaelin Units ranging in capacity from 5000 to 13000 kw, which, expressed in terms of steam output, represents a range of approximately 15,000 to 40,000 lbs. of steam per hr. The range of unit capacities available is considerably greater than this, running from about 3000 to 150,000 lbs. of steam per hr. A unit of the latter size—the largest electric boiler to date—is now being constructed by us for a plant in Oregon.

If your mill is confronted with a steam shortage now or in the near future, we suggest that you get in touch with us without delay. Our nearest agents are R. E. Chase & Co., Tacoma Bldg., Tacoma, and R. L. Johnson Co., Monadnock Bldg., San Francisco.

COMBUSTION ENGINEERING

200 MADISON AVENUE C-E NEW YORK 16, N. Y.

Once Upon a Time Uncle Sam Was "Agin" Pulp Mill Alcohol

Present interest in production of spirits from the effluent of sulphite mills is a reversal of attitude of 30 years ago ' ' ' The story of the West Linn operation may not be as significant as those of present era—but it had the elements of humor—and excitement, too.

ALONG about 1914, the inventor of chemical blond hair ad lib, came to the Pacific Coast and visited the pulp and paper operation at the small city of West Linn, Oregon. When he found the first chemical laboratory of the Pacific Coast industry doing a good job, although hindered both from within and without, the good doctor wanted to play with the equipment and made arrangements to that end. While working alongside some of the chemists, he found that they were experimenting with the element of a sulphite mill, then termed a chemical complex, and was surprised to learn of the many parts into which this complex had already been divided, as it were. And while he did not think of making something that could be used to make blondes into brunettes, when the girls changed their minds, still he thought if successful, he might produce a soother, in the form of alcohol, should one not be satisfied.

Anyway, the laboratory could be used; there would be no additional cost per ton of products; and B. T. McBain's Scotch instincts came to the fore. An arrangement was completed with Dr. Marchand to guide the procedure he had in mind, with the assistance of the laboratory technical men.

It did not take long to prove that the sugars in the waste would do their stuff with the aid of baker's or brewer's yeast and not only make more yeast, but close to 1½% of "the batch" quantity would be alcohol of value at least in industrial pursuits. With this start, plans were prepared for production on a larger scale and, with the aid of the millwright crew, many of whom could see brighter days ahead if successful, a plant expected to produce barrels of alcohol per day was in operation.

Naturally, it was not smooth sailing; the troubled waters of the Willamette River were strewn with the wreckage of the "try this" and the "try that" that had been tried and found wanting — wanting alcohol. However, Rome was not built in a day, and the doctor had lived long enough and made experiments years by the many, to know that even blond hair took time to come through the process, so he kept on trying and the day finally arrived to sell alcohol in the markets of Oregon, for industrial uses at least, and a distributor was put to work.

Now that the wartime needs of the United States and Canadian governments for alcohol has caused a revival of alcohol production in North American pulp mills, some old-timers on the Pacific Coast are recalling the old days at West Linn, Oregon.

An alcohol still was installed at the pulp mill there and made 200 gallons per day for a short time. Of course, the operation didn't compare with the one now producing at Ontario Paper Company, Thorold, Ontario, or the biggest plant built anywhere which will rise this year at Puget Sound Pulp & Timber Company, Bellingham, Washington. Today Uncle Sam is eyeing other big mills as prospective cites for reduction plants. However, in the old days at West Linn, the old gentleman had quite different news on the subject as the following chronicle reveals.

Quicker than it has taken to tell the story to this point, it was ascertained by Uncle Sam's "spiritual advisor" of that period, that the Willamette River industrial alcohol was being consumed by humans without bad effect, other than usual, so they looked to the source of the "happy liquid" coming from some Willamette port by river steamer in barrels with the usual sized bunghole.

One morning, a government agent with a nice uniform, appeared at the mill and asked for permission to see the Willamette paper mill alcohol plant, claiming it to be producing illicit liquor the equivalent of that made by the hill billy plants of some other states and asked that the manager of the mills, B. T. McBain, not only accompany him to the still location, but to the offices of the Internal Revenue Department in Portland for questioning and explanations.

After seeing the still in operation, this nice uniformed gentleman ordered that the work be discontinued pronto and that no more deliveries be made without government release by license or order. As sufficient time had elapsed the surprised mill executive had gotten in touch with the company's legal department in Oregon City and, on the way to "the cooler" in Portland, the officer agreed to stop at the attorney's office in that famed papermaking city just across the river.

How long that little still stood still and out of a job, is not of record; suffice it to say that the procedure following its seizure wound up with the federal official clamp being removed, after the issuance of a federal permit to continue making something out of nothing. The little blind pig was now a legitimate pilot manufacturing plant, which some claim the river boat pilots going through the United States locks often carefully inspected with an eye to its freight value only.

As nothing was in the book that the chemists could find showing that others had made alcohol from sulphite mill waste, specifications were changed from time to time, questionable procedures were altered, added to, or deductions made. But the product was declared to be fit for human consumption. While that little plant actually produced alcohol at a profit, company officials probably thought the mill operators and employees had been on a legal binge a sufficient length of time, so they closed the operation.

Fletcher Now President Of J. O. Ross Corp.

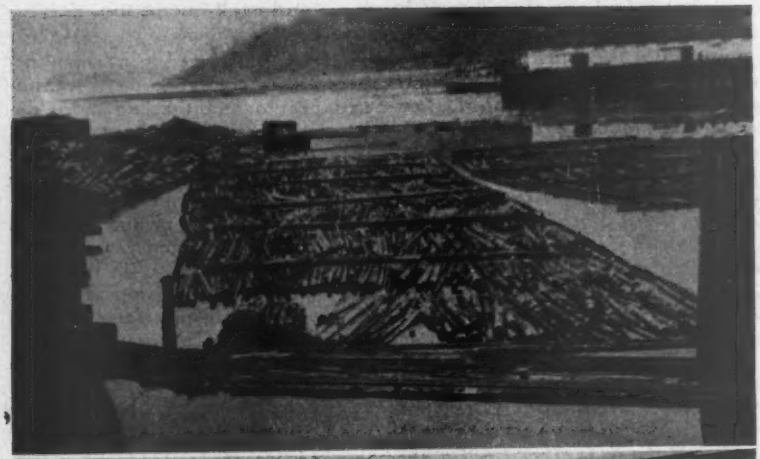
● S. W. Fletcher, for many years executive vice-president of the J. O. Ross Engineering Corp., has been elected president of that company and will continue to make headquarters in New York. A. E. Montgomery will continue as vice president with headquarters in Chicago.

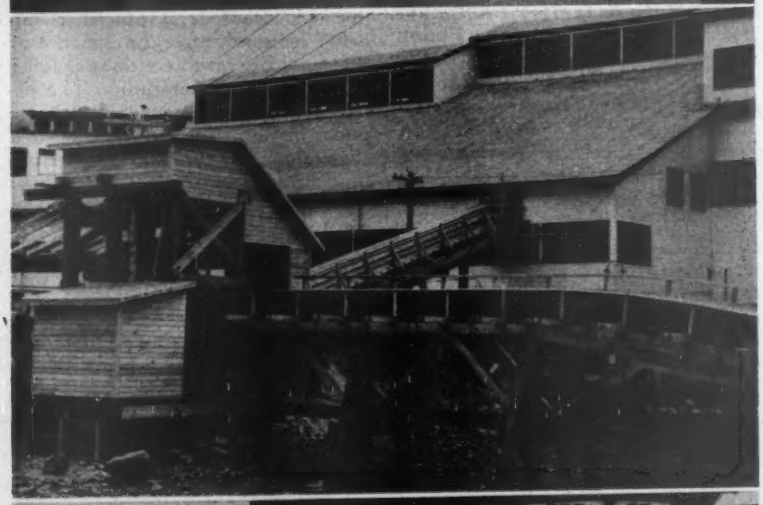
Other officers elected: Vice presidents, H. G. Rappolt and F. W. Partsch; treasurer, J. A. Ronder, and secretary, R. W. Grott.

Texas Gulf Award

● The Texas Gulf Sulphur Co. has won for the fourth time the Army-Navy production award for outstanding achievement in producing materials essential to the war effort.

"Ladysmith Experiment" Reaches a New Stage; Special Booming Method Devised for Small Logs





● The experiment in the utilization of small logs by Powell River Co., which has been followed with keen interest throughout the pulp and paper industry entered another significant stage recently when the first boom of substantial size reached Powell River, B. C., from the Comox Logging Co.'s booming grounds at Ladysmith on Vancouver Island.

The boom consisted of 14 sections of bundled logs of small diameter, each section containing an average of nine bundles. Each bundle had an average of 50 pieces and each bundle averaged the equivalent of 4000 feet, B. C. log scale.

These logs had heretofore been left in the wood after primary logging operations were completed in the Comox Logging Co.'s truck-logged timber area (common practice in the far west, where only big timber has in the past been taken out of the woods). They were yarded out by light tackle to truck roads, where they were hoisted onto trucks and at that point tied in bundles by means of three pieces of wire—an operation first described in an illustrated article in June 1944 issue of Pacific PULP AND PAPER INDUSTRY.

The wire was old material that had been salvaged, another element in minimizing the cost of the experiment, which in the final analysis must stand or fall in its economic aspects. The small logs, thus bundled, were trucked to the booming grounds at Ladysmith and there made into flat booms.

The tow was brought into the boom pond of Powell River Co.'s sawmill, where a suitable small, independent mill was especially set up to deal with the small logs. Powell River Co. mechanics assembled this experimental mill largely from spare material and parts.

The plant consists of twin 52-inch cut-off saws driven by a 30 h.p. motor with 950 r.p.m. The control is air operated.

Bundles of logs are released from the tow and brought into a small selection pond where the wires of the bundles are removed and the contents are hauled up a jack-ladder and cut off into 32-inch lengths by a twin power saw.

The intention is that all logs of ten

HERE ARE SCENES THAT ARE GOING TO BECOME MORE AND MORE FAMILIAR in the far west as pulp and Paper industries start using more small wood. This small stuff was formerly left on logging shows as not worth the trouble and expense when so much big timber was to be had . . . Now those days are becoming history.

Above—Bundles of small logs in sections as they arrived from "Ladysmith Experiment" in the log storage at Powell River Co. operations.

Center——Jack ladder and new small sawmill built at Powell River. This is the small building in the foreground. The main sawmill in rear.

Below—Small logs in jack ladder. Compare them with big timber nearby. Subsidiary boom pond of Powell River Co. is in background.

BEAR BRAND

CHEMICALS FOR THE WESTERN PAPER INDUSTRY

- Ammonia
- Caustic Soda
- Zinc Hydrosulphite
- Chlorine
- Sulphur Dioxide

GREAT WESTERN DIVISION
THE DOW CHEMICAL COMPANY

Seattle SAN FRANCISCO, CALIFORNIA Los Angeles

GREAT WESTERN DIVISION • BEAR BRAND PRODUCTS • THE DOW CHEMICAL COMPANY

DOW

CHEMICALS INDISPENSABLE TO INDUSTRY AND VICTORY

inches or over, for full length, will be sidetracked and sent up the log haul of the main sawmill, which is located directly adjacent to the small experimental plant.

The 32-inch blocks coming from the saw are taken up in a cross conveyor and then transferred to the main block conveyor running to the barker mill preparatory to moving on into the pulp mill itself.

Any logs of a diameter of 10 inches or over at one end are sidetracked from the conveyor and delivered to a platform in order that they may be split. In the present experiment these larger logs are being split by hand, but should the experiment prove a success, it is intended to install a power splitter at this point in the operation.

The logs being delivered in the bundles run from six to 60 feet in length, with an average of 26 feet, on the logs scaled to date.

The crew working at Powell River Co. directly in connection with this experiment comprises only five men—two men on the boom, one on the power saw, one man on the splitter deck, with a scaler operating on the jack ladder.

IT WAS A BIG DAY FOR BLAKE, MOFFITT & TOWNE, San Francisco, when the paper company received the Minute Man Flag recently, denoting 90 per cent of employes were investing 10% of salaries in bonds. Left to right: James K. Moffitt, president; Hugh E. Ryan, War Finance Committee; Master Tchl. Sgt. Diggory Venn, U. S. Marines; James W. Towne, vice president of BMT; Arthur W. Towne, vice president and manager of San Francisco Division, BMT; Phil Kast, Treasury Dept.'s Payroll Savings Division and Frank L. Lange, oldest San Francisco employe.

Appointment of RICHARD F. BERKELEY Jr. as sales manager, printing paper department, Blake, Moffitt & Towne's San Francisco Division, is announced by the pioneer western firm. "Dick," as he is known to many friends, succeeds H. P. Westler who has been with the company since 1924. Mr. Westler resigned to accept a position as a mill representative for a large paper manufacturer. Mr. Berkeley entered Blake, Moffitt & Towne in 1923, coming from Richmond, Virginia.

Coupled with this announcement is the news that FRANK L. UNTHANK will become sales manager of the company's mill department. This branch has charge of the large contract and converter accounts.

O. W. MIELKE, general manager of B-M-T, commented: "We much regret having to accept the resignation of Mr. Westler, who, however, leaves with our every good wish for success. We are happy to be able to advance such men of ability and experience as R. F. Berkeley Jr. and Frank L. Unthank, to carry on the direction of sales."

25,000 Ft. in 8 Hours

● Company officials estimate that the present installation will handle about 25,000 feet, B. C. log scale (about 50 cords) in an eight-hour shift. The present operation is experimental to determine the suitability and value of this type of pulpwood.

The exepriment has a three-way basis, being sponsored jointly by the British Columbia government, Comox Logging & Railway Co. and Powell River Co. It has been estimated that the amount of small wood left on some timber claims after heavy logging has been completed often runs about 20 percent of the regular cut.

Small logs are still being accumulated at Ladysmith for Powell River Co., but it seems likely that shipments will not be on a regular basis until the Powell River technical staff has had an opportunity of completing its analysis of the material so far delivered.

Powell River Co is also utilizing some spruce slabs shipped up from Victoria by barge from the mills operated there under the wartime direction of Spruce Products, Ltd., headed by Percy Sills.

The sawmilling at Powell River is divided into two sections, one of them producing lumber—mostly spruce for aircraft construction and the other preparing hemlock, balsam and spruce for use in the pulp and paper mills. The company handles about 500,000 feet (about 1,000 cords) every 24 hours.

Superintendent of the Powell River sawmill is J. Howard Jamieson. Barney MacDonald is assistant superintendent.

34 Missions for Lt. Zellerbach

● Second Lt. J. D. "Jimmy" Zellerbach Jr., USAAF, son of J. D. Zellerbach, president of the Crown Zellerbach Corp., and now co-pilot on a Liberator bomber, writes home that he has completed 34 missions.

Oregon P. & P. Co. Track Spur

● A 26 car double track spur to the Southern Pacific Railway has been completed for the Oregon Pulp and Paper Co., Salem, Ore., to permit this company to buy logs in the open market and unload them through a donkey at the mill.

Lt. Killam Missing In Action In France

● Lieut. David Killam, son of Lawrence Killam, president, British Columbia Pulp & Paper Co., Vancouver, B. C., has been reported missing. He was in charge of a flotilla of four torpedo boats and was returning to England after operations off the French coast when his boat was sunk by shell fire. Lieut. Killam was last seen clinging to a gas tank, and he waved off a boat that sought to pick him up with the statement that he was all right. He instructed the rescue craft to first rescue the men in the water. Later efforts to rescue him proved futile.

Henry Samson Dies

● Henry L. Samson, mill and sales coordinator for National Paper Products division, New York office, Crown Zellerbach Corp., died July 13, after a serious illness. Mr. Samson joined the sales organization of the Zellerbach Paper Co. on the west coast in 1913.

He pioneered interfolded paper towels in the east for National Paper Products Co. and within a few years was made general manager of the mill at Carthage, N. Y.

In 1920, after leaving National Paper Products Company, he went into a partnership manufacturing toys out of compressed pulp. In 1923 he became general manager of Domestic Mills Paper Co., and in 1928, joined the Hoberg Paper Mills. He rejoined Crown Zellerbach in 1933.

Crown Zellerbach Closes Cathlamet Sawmill

● Crown Zellerbach Corp. is closing down its sawmill at Cathlamet, Wash., and hereafter its timber in that area will go to its pulp and paper mills.

Announcing the shutdown, E. P. Stamm, logging manager, pointed out there was a serious depletion of high grade Sitka spruce. He said:

"Crown Zellerbach Corporation is engaged primarily in making pulp and paper and has reached the time when the log supply has become so critical that we can no longer operate the sawmill in addition to the pulp and paper mills."

The sawmill started up in 1929.

Give Hooker's Technical Staff a Part in Your Post-War Plans

It doesn't take a crystal gazer to predict that new things are developing in the paper making industry, waiting only for war's end to bring them into being. Whatever your plans, you will find Hooker a source of helpful information that will lighten your burden and will aid you in turning ideas into practical results.

Hooker research helps paper makers

A working partnership with the paper mills that extends back for more than thirty-five years and which includes both independent and collaborating research in better paper making through chemicals, has given Hooker a fund of information that can be helpful to you now and in the future.

Hooker pulp manufacture bulletins

Some of the information resulting from this research is available in printed form as Bulletins on various phases of pulp manufacture Other information is in the form of laboratory reports and in the experience and knowledge of our technical staff. All are available to you for the asking.

Hooker upholds quality and service

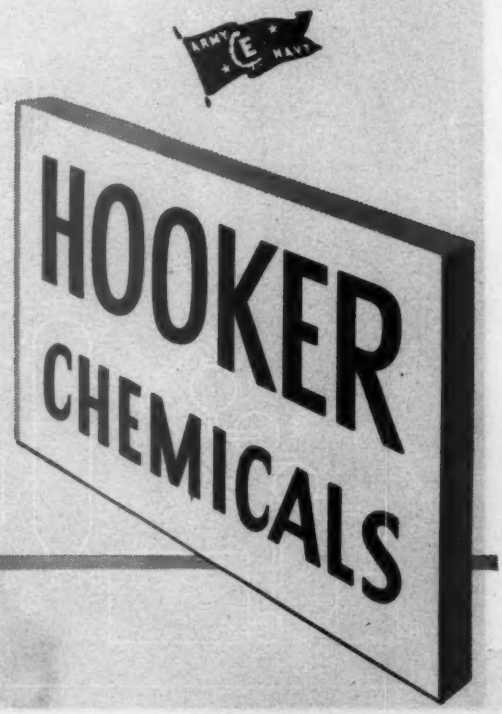
Although your supplies of many chemicals are now restricted, Hooker endeavors to take care of your needs with the same considerate service and same high quality materials that have won the confidence of your buyers for many years.

When government restrictions are finally lifted, Hooker will again be ready to furnish you with the chemicals you may need to do a better job.

HOOKER ELECTROCHEMICAL COMPANY

2 Union Street
NIAGARA FALLS, NEW YORK

NEW YORK, N. Y. • WILMINGTON, CALIF
TACOMA, WASH.



Chemicals for the Paper Industry

LIQUID CHLORINE — CAUSTIC SODA
BLEACHING POWDER — SODIUM SULFIDE

Acid Making In the Sulphite Pulp Industry

By A. H. LUNDBERG*

CHAPTER III -- Continued

C. SO_2 GAS ABSORPTION IN RAW OR STORAGE ACID

Absorption of SO_2 gas in the raw acid or in a bisulphite solution was discussed in paragraph IX, Chapter II.

When the recovered SO_2 gas is absorbed in the above media, the true free SO_2 in the acid is increased. In a case where the acid strength or its combination is satisfactory without this extra increase of the true free SO_2, the steps mentioned under section 1 this paragraph are taken: that is, recirculation over the strong tower or allowing more gas return from the reclaiming system to the acid plant.

Two methods are in use for absorption of the recovered SO_2 in the raw acid or the storage acid. One of these utilizes an Eductor (See Fig. 29); the other an absorption tower, (See Fig. 30). Of these, the absorption tower method most likely is to be preferred.

CALCULATIONS

Assumed data:

Sulphur consumption per ton pulp—200 lbs.
Sulphur loss in system per ton pulp—8 lbs.
Raw acid requirement per ton pulp—12,500 lbs.
Cooking acid requirement per ton pulp—19,200 lbs.
Burner gas (dry basis)—17%
Temperature of fresh water—60° F.
SO_2 recovered per ton pulp—100 lbs.

Thus:

Sulphur burned per ton pulp—200 lbs. = 400 lbs. SO_2
SO_2 consumed for acid making—384 lbs.
If we assume that 29 lbs. SO_2 is returned to the raw acid plant, the total SO_2 available for the raw acid is 413 lbs.
The total raw acid thus necessary is:

$$413 \div 125 \text{ or } 3.30\% \text{ Total } SO_2$$

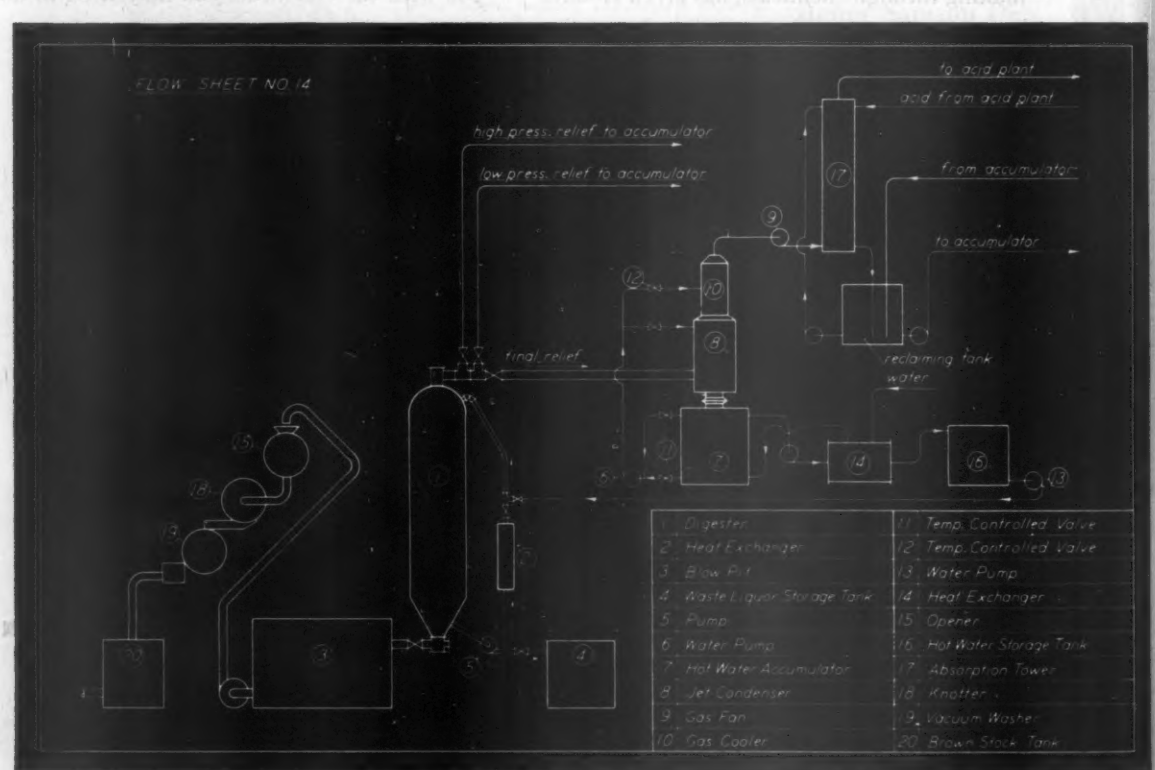
which, according to Chart XXIII, gives a combined SO_2 of 1.39%.
The raw acid after mixing with the recovered SO_2 gas will test:

$$4.11\% \text{ Total} - 1.39\% \text{ Combined } SO_2$$

Consequently this is exactly the same acid as calculated under absorption of the SO_2 in water. It is understandable that it should be so, as the ratio of combined to total SO_2 is constant throughout the lime stone packed tower under the same temperature conditions. As pointed out under "A" this paragraph, it will be necessary to circulate either gas or acid over the strong tower or permit more gas return from the reclaiming system if this combined SO_2 is too low.
For instance, a 12% gas will give an acid

$$3.30\% \text{ Total} - 1.46\% \text{ Comb. } SO_2$$

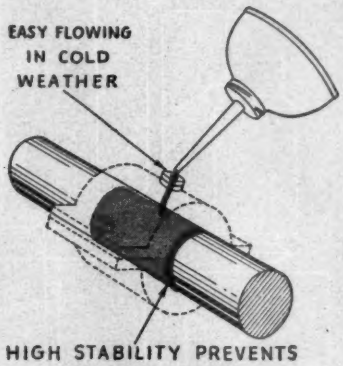
*Seattle, Washington. Mr. Lundberg is Western Manager, G. D. Jenssen Company, New York City.



STANDARD ENGINEERS NOTEBOOK

Stable, uniform oil for general external lubrication

Because it is pure solvent-refined mineral oil, carefully manufactured, Calol Red Engine Oil may be used for almost all ordinary lubrication in an industrial plant.



It has a low carbon residue and pour test rating that gives it a wide application range. It is exceptionally stable in use and does not form objectionable deposits in or around bearings.

Calol Red Engine Oil is recommended for engine bearings, machinery and shafting that are lubricated by squirt cans, ring-, chain-, bottle-, drop-feed- or wick-oilers. It is also used in some circulating systems.

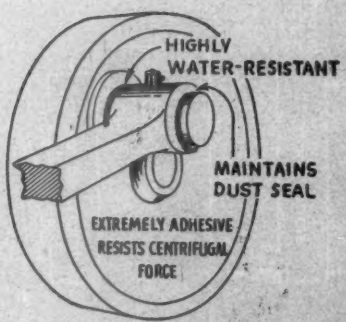
It is sold in five grades: 11, 15, 18, 20 and 25. The lighter grades may be filtered for re-use.

Grease lubrication under severe operating conditions

When heavy bearings are subjected to shock loads, must operate in dust or water conditions or when a lubricant that will not readily throw off is needed, Calol Multi-Service Grease is recommended.

This black colored grease contains a heavy oil blended into its special soap base. The oil spreads over bearings a tough film that is difficult to rupture or displace. The special soap base provides a seal against water and dirt.

There are seven grades of Calol Multi-Service Grease. Numbers 0 and 1 are used for enclosed light gears and gun-lubricated heavy machinery. Two and Three are widely used on mill machinery. Four, Five and Six are exceptionally stiff and are particularly adapted for use on plain, low-speed journal bearings with large clearances.



Standard Fuel and Lubricant Engineers are always at your service. They'll gladly give you expert help—make your maintenance job easier. Call your Standard Representative or write Standard of California, 225 Bush St., San Francisco 20, California.

STANDARD OF CALIFORNIA

or, if instead of 29 lbs. SO_2 return, 49 lbs. is allowed, the tower acid will test

3.47% Total — 1.47% Comb. SO_2

or, if 94 lbs. SO_2 is returned

3.82% Total — 1.65% Comb. SO_2

See Fig. 24 and Fig. 31.

As noted, the recovery of the formerly wasted SO_2 gas has proven not only economical but a simple and efficient method for control of the acid composition. One mill known to the writer has been able to satisfactorily control the acid composition the year round through the recovery of only 35 lbs. equivalent sulphur per ton of pulp, which was not possible before the system was installed. The Absorption Stripping System is used.

Another reason for the adoption of recovery systems which may be mentioned, even if falling outside of acid making, is that in recent years legislation regulating the propagation of sulphur dioxide fumes in populated areas has become more severe.

III. USE OF A SINGLE BLOW PIT

During recent years the use of a single blow pit or blow tank common for all the digesters has been advocated and such installations have been made in a few mills.

There are no doubts that something in that line will be necessary in the future as the recovery of the dissolved organic materials in the waste liquor becomes not only obligatory on account of stream polution but economical.

A recovery system in connection with a single blow pit becomes simpler in design and operation, and is

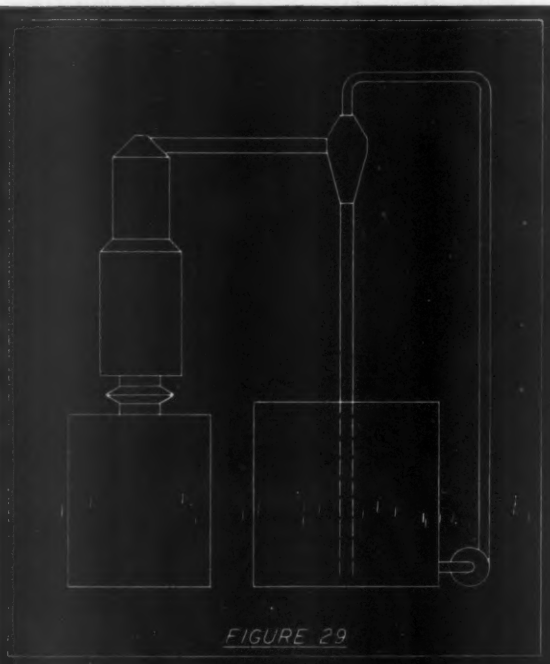


FIGURE 29

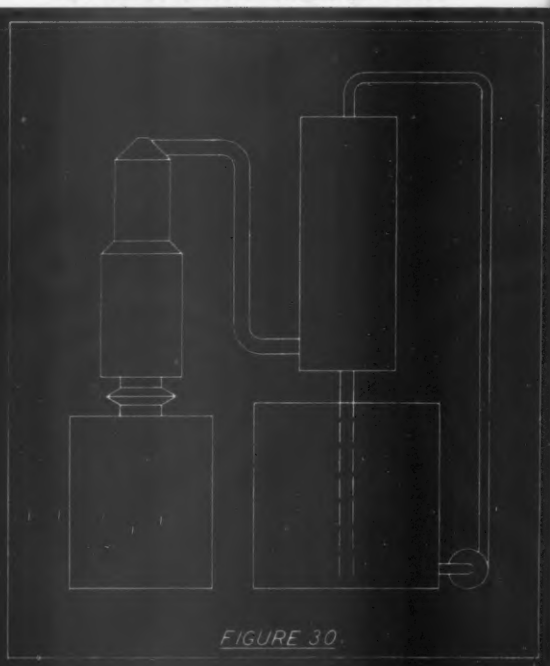


FIGURE 30

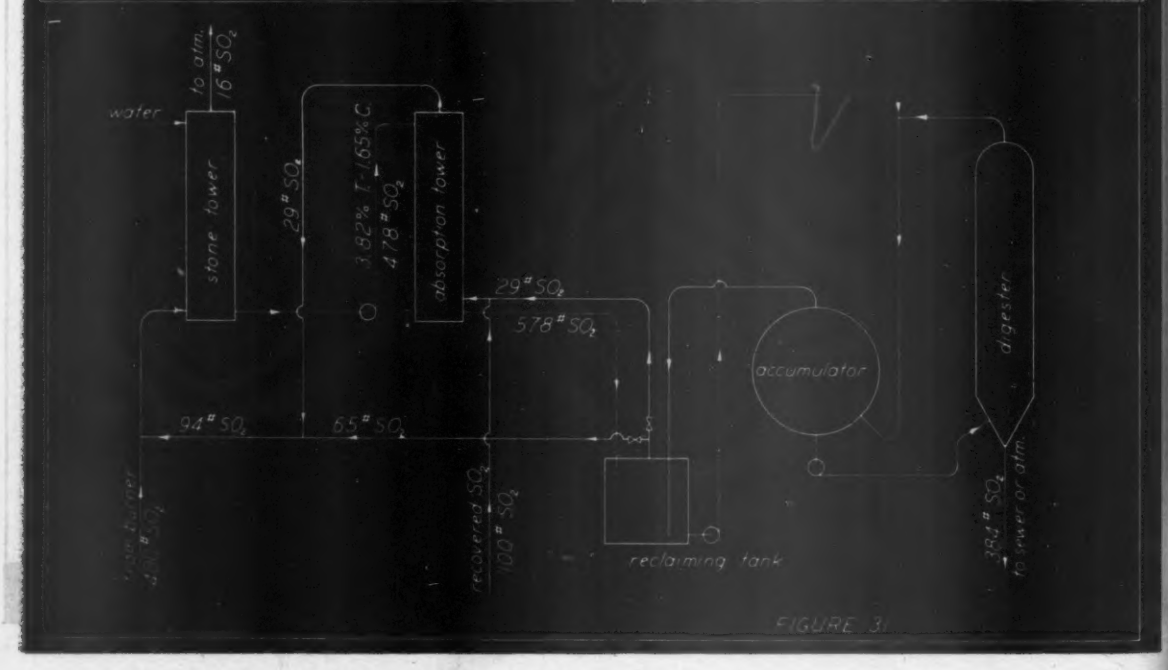
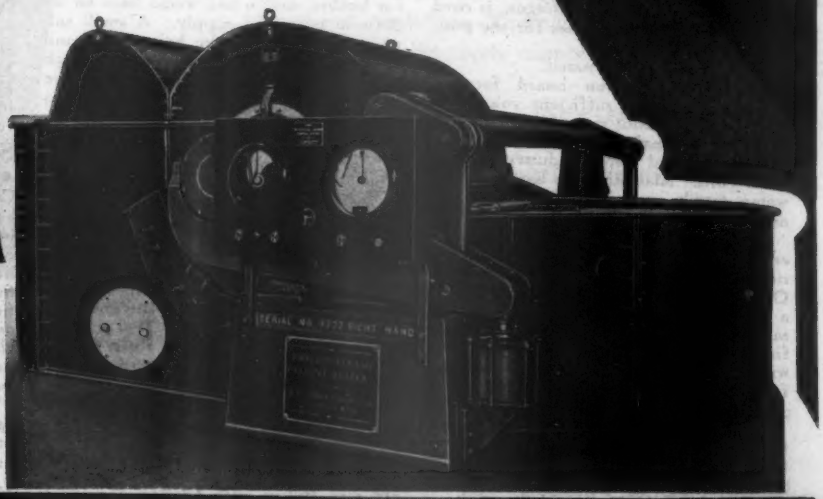


FIGURE 31

THE TREND IS TOWARDS THE JONES-BERTRAMS BEATER



Jones

GEARED FOR WAR PRODUCTION

E.D. JONES & SONS COMPANY-PITTSFIELD, MASS.

Builders of Quality Machinery for Paper Mills

less costly to install.

For optimum result both in heat or SO_2 recovery, it is recommended that blowing is performed on a dry blow pit bottom or on one flooded with hot sulphite waste liquor.

IV. DUMPING INSTEAD OF BLOWING

The practice of dumping instead of blowing a digester is in general use in European mills. There are a few mills in this country using the same method.

By "dumping" we mean the slushing out of the digester content at practically atmospheric pressure; thus the digester pressure will be relieved before emptying takes place. Blowing, of course, is done at elevated pressures.

The dumping method takes longer but in return makes for higher SO_2 and heat recovery. See **Flow Sheet No. 14.**

In general, the required equipment on **Flow Sheet No. 14** is the same as shown on **Flow Sheet No. 13.** The main difference is the absence of the vomit stack.

The digesters are relieved in the usual manner until the pressure is too low for relieving into the accumulators or acid tanks. When that point is reached, or somewhat earlier if preferred, the relief is turned to the jet condenser **(Item 8).** The recovery system proper is a standard Rosenblad System and operates as described under **Flow Sheet No. 13.**

When the pressure is down to the desired point, the pump **(Item 5)** is started, sending the waste liquor to the storage tank **(Item 4).** Pump **(Item 13)** is also started, sending hot water from tank **(Item 16)** to the digester **(Item 1).** In this manner the pulp is washed in the digester by the diffusion method, and a practically undiluted and hot waste liquor is obtained for further utilization. When the waste liquor is withdrawn, the digester content is dumped into the blow pit.

The heat exchanger **(Item 2)** is not essential. Neither is it necessary to withdraw the waste liquor as described. When the pressure in the digester is relieved off, the digester content can immediately be dumped into the blow pit, and the washing done in the usual manner. The hot water can be used for washing the pulp in the blow pit or for any other suitable purpose.

It is understandable that a system as per **Flow Sheet No. 14** requires smaller equipment than a system according to **Flow Sheet No. 13,** because the time for condensing and absorbing the SO_2 is prolonged. Instead of a total time of 10-15 minutes for blowing, one hour or longer can be calculated for bringing the digester pressure down for dumping.

Thus if the recoverable SO_2 is 100 lbs. per ton of pulp and the digester holds 15 tons of pulp, the amount of SO_2 to be recovered per minute drops from 100 lbs. for blowing to 25 lbs. for dumping. The heat recovery drops in the same proportion.

The SO_2 absorption becomes simpler and direct absorption in the raw or storage acid is recommended.

New Paper Industry In South Oregon Favored

● In a survey by the industrial and resources development division of Bonneville Power Administration, the establishment of a pulp and paper mill in Klamath County, in Southern Oregon, is cited as one of the opportunities for the postwar period.

Parts of the report stated:

"About one billion board feet of Douglas fir and a sufficient volume of pulp species—about three billion feet of hemlock and balsam firs—are available for a pulp and paper industry at Klamath Falls. Klamath Falls has an ample water supply, numerous industrial sites and adequate rail facilities.

"All pulp and paper mills in the western part of the United States, except one near Spokane, are located in western Oregon and Washington. In the past, a cheap log supply and water transportation favored location in the Douglas fir region. Intermingling of pulp species with Douglas fir stands led to a low price for pulpwood, as the logger made his profit in cutting Douglas fir.

"This situation started to change before the war. The open log markets have virtually dried up, and Douglas fir logging has started to move to the upper Willamette and Umpqua Valleys, where the volume of pulp species in Douglas fir stands is small. Pulp and paper mills must look for other sources and pay a higher price for pulpwood. A Klamath mill would not have the disadvantage of more costly pulpwood.

Interior points such as the Rocky Mountain area, the Midwest and the Southwest would provide markets where Klamath Falls will not be required to meet water competition. However, with existing favorable freight rates, a Klamath mill could also enter northern California markets. Another favorable factor is the expected increase in the demand for paper and paper products.

"A small mill producing kraft paper products with a capacity of about 100 tons daily would employ about 300 workers. It would also provide jobs for about 50 additional loggers to cut 25 million board feet of pulp logs per year. If pulp species are not cut extensively for lumber, such a mill would have an indefinite pulpwood supply. A small sulphite mill utilizing the balsam firs and hemlock is another possibility, although the kraft mill appears more likely, since it would use the Douglas fir as well as the pulp species."

LT. GEORGE C. ARNOLD, U. S. Army Air Corps, formerly on the staff of the Bulkley, Dunton Pulp Co., is now holder of the Distinguished Flying Cross and the Air Medal with three Oak Leaf Clusters. According to the U. S. Strategic Air Forces in Europe, "Lt. Arnold was flying over France, Germany and other enemy-occupied European countries and helped to extend ground gained on the Continent by seeking out enemy aircraft and engaging them in cambat by providing escort protection for bombers, by strafing ground installations, etc.

Colton Back From Tour

● L. A. Colton, vice president, Zellerbach Paper Co., San Francisco, is back at his desk after an esatern tour. Mr. Colton called on numerous business friends, among them H. A. Moses, founder and principal owner Strathmore Paper Co., West Springfield, Mass.

Lufkin Man Elected

● C. B. Edwards, controller of the Southland Paper Mills, Inc., Lufkin, Texas, has been re-elected vice-president of the Houston (Tex.) Control of the Controllers Institute of America.

Now It's Marathon Corp.

Marathon Paper Mills Co. of Rothschild, Wis., will hereafter be known as Marathon Corp. A letter from D. Clark Everest, president, states this is a change in name only and that the organization remains the same.

Shotwell Forms Company

● I. C. Shotwell, plant engineer of the Camas, Wash., division, Crown-Zellerbach Corp. until his resignation July 1, in August announced the establishment of the Aberdeen Engineering Construction Co. at Aberdeen, Wash. The new firm will confine immediate construction to war contracts, with ship rudders as a major project. After the war's close the company plans to construct homes, and engage in marine repair work and special engineering.

Mr. Shotwell, graduate of Oregon State College, was with Crown Zellerbach at Port Townsend, Wash., for two years and at the Camas mill for 15 years.

Killed At Port Chicago

● The Port Chicago, Calif., disaster struck Hawley Pulp & Paper Co., Oregon City, Ore., in the loss of Hugh E. Crawford, maritime seaman, on leave from the groundwood department of the mill.

Harry Baxter Dies

● Harry Baxter, long time employe of Crown Zellerbach Corp., died on July 11 in Portland, Ore., and was buried in Oregon City. Mr. Baxter served as construction superintendent at the Camas, Wash., mill, leaving there in 1920 to fill a similar position at West Linn, Ore., for the C-Z mill. After an additional two years of service there, he was retired.

Regulated SECTIONAL DRIVE

New G-E system refines speed regulation of sectional drives—combines high accuracy and fast response

HOLDS SPEEDS PRECISELY—Speeds of the section motors are continuously held within 0.05 per cent of the preset level, despite variations in loading. A precise differential between one section and the next can be held over a wider speed range. Draw adjustments can be made smoothly.

RESPONDS LIKE LIGHTNING—To maintain section speed regardless of load changes, a voltage difference of the order of 0.1 volt is electronically amplified, then put into action by an instantly responsive amplidyne. There are no mechanical lags. Inertia is effectively counteracted.

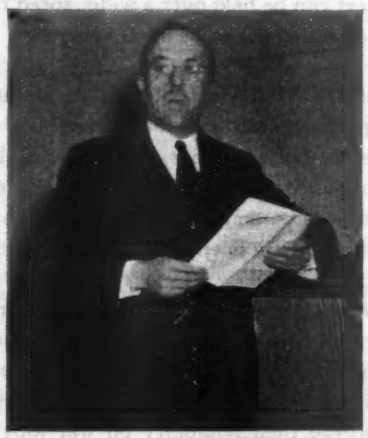
ELIMINATES COMPLEXITY—There are no cone pulleys, belts, or carbon piles in the regulating system. Electronic voltage-reference and amplifiers are simple, standardized types that have proved their reliability on war jobs where lives depended upon them. Tubes (3 per section) are long-lasting "hard" types, and duplicate standbys go into service at the throw of a switch.

This new regulating system is just one more step in General Electric's continuous record of pioneering in the field of paper-mill drives. Centralized control, applied through sectional drives, has set new standards for wide-range flexibility and high speeds in papermaking. G-E auxiliary wet-end drives, and individual drives for chippers, grinders, stock-preparation machines, supercalenders, and winders have established exceptional performance records. G-E engineering combines, to an unusual degree, a specific understanding of paper-mill requirements with broad-based electrical experience in building and applying motors, generators, and control. ***General Electric Company, Schenectady 5, N. Y.***

Greater Utilization of Natural Resources Is Becoming a National Necessity in U. S.

By LAWSON P. TURCOTTE*
Executive Vice President
Puget Sound Pulp & Timber Co.

I BELIEVE that the great advances made in our country during the past few years come from the realization that our so-called unlimited natural resources is a myth and that some of these raw materials are arriving or have arrived at the scarcity state, where substitutes just have to be found to replace them. With the many technical advances and scientific discoveries during the past few years there should not be any "have not" countries if such technical and scientific discoveries are made the fullest use of. This should go a long way toward elimination of conflicts which arise from certain countries' claims that they must have raw materials, the property of other countries. This has been amply demonstrated by the manner in which Germany has been able to carry on a total war for five years with a great many synthetic materials. She has probably used up enough of some of the materials that would have kept her supplied in comfort for the next hundred years in peace.



LAWSON P. TURCOTTE, Executive Vice President of the Puget Sound Pulp & Timber Co., and a director of the U. S. Pulp Producers Association, is pictured here as he was speaking on the need for fuller utilization of our natitonal resources.

No greater illustration of what can be done to replace a non-existant raw material can be given than the sudden stoppage of imports of raw rubber into the United States, and the most successful and rapid program of production of synthetic rubber, and it looks to me that with the technical improvements which are bound to be made in this great development that the United States can, if necessary, do entirely without its prewar rubber supply, but probably the most sensible way to approach this postwar problem would be to provide for the use of both sources of supply in order that this country may face the future with assurance. The estimated production of synthetic rubber by July of this year is on the basis of 800,000 tons per year whereas the highest consumption of rubber in any previous year was 775,000 tons in 1941.

The future rubber program has a direct bearing on one of the subjects mentioned in today's program and that is the production of alcohol from waste sulphite liquor.

Ethyl alcohol is used in the production fo butadiene for synthetic rubber and it is reasonable to assume that even if a portion of the synthetic rubber program is carried on in the postwar period, alcohol requirements in the United States will be much greater than the prewar period. Requirements of alcohol increased from 226 million gallons in 1942 to an estimated requirement of 632 million gallons in 1944. None of the requirements in 1942 were for synthetic rubber, whereas the 1944 requirements include 328 million gallons for synthetic rubber which is more than 50% of the total 1944 requirements.

Alcohol for Fuel?

● Another possible future use for alcohol is for fuel purposes. Such use is not new in European countries, and of necessity has now been adopted by the great South American country of Brazil. Prior to the outbreak of war Brazil imported over a million tons of liquid fuel yearly. This supply was cut off at the advent of war. In order to prevent the paralysis of their truck and car fleets one of the substitutes used has been anhydrous alcohol, output arising from 26,000 gallons in 1933 to 26 million gallons in 1944. Before the war Brazil compelled the mixing of 5% alcohol in motor fuel. Now the percentages range from 20% to 70%, some cars being operated reportedly on pure alcohol. Whether such use of alcohol is feasible in the United States will naturally depend on the cost of such fuel, as well as what is considered a safe depletion of natural oil reserves.

Alcohol is normally used in many and varied products such as anti-freeze; in the production of lacquers; shellac varnishes and enamels, plastics, photographic film, cellophane, explosives, vinegar, toilet preparations, rubbing alcohol, ethyl acetate and many other products too numerous to mention here. There is no question that markets for these normal products will increase and require additional quantities of alcohol over and above prewar demands.

Production of alcohol from waste sulphite liquor such as is proposed at the plant of Puget Sound Pulp & Timber Company at Bellingham is not new. Many such plants are and have been in operation for many years in the Scandinavian and European countries.

As to the continued operation in the postwar period of such plants as are built to produce alcohol from waste sulphite liquor and from wood waste, this will depend on the demand for such alcohol and on their competitive position in the alcohol field. I feel that alcohol produced from waste sulphite liquor has a most excellent chance of survival in such a competitive market. I am not a believer in government subsidies to keep such plants operating even though other countries are operating under such a program, but I am in the hopes further scientific research will enable operation of such plants competitively, also that postwar developments in the great Pacific Northwest will include such chemical plants that use large quantities of industrial

*From an address delivered before the Washington State Farm Chemurgic Committee in Bellingham, Wash., April 19, 1944.

PAPER

17 million tons* of it!

GENERAL CHEMICAL COMPANY *products for the Paper Industry:*
Aluminum Sulfate (*Standard and Iron Free*) • **Sodium Silicate**
Zinc Chloride Solution • **Glauber's Salt** (*Crystal or Anhydrous*)
Sodium Sulfide • **Sodium Bisulfite** (*Solution or Anhydrous*)
Crystal Alum, Potassium • **Salt Cake** • **Trisodium Phosphate**
Sodium Metasilicate • **Sodium Hyposulfite** • **Muriatic Acid**
Sodium Sulfite Anhydrous • **Sodium Aluminum Sulfate**
Epsom Salt • **Nitre Cake** • **Sulfuric Acid**

GENERAL CHEMICAL COMPANY

40 RECTOR STREET, NEW YORK 6, N. Y.

Technical Service Offices: Atlanta • Baltimore • Boston • Bridgeport (Conn.) • Buffalo Charlotte (N. C.) • Chicago • Cleveland • Denver • Detroit • Houston • Kansas City • Milwaukee Minneapolis • New York • Philadelphia • Pittsburgh • Providence (R. I.) • St. Louis • Utica (N. Y.)
Pacific Coast Technical Service Offices:
Los Angeles • San Francisco • Seattle, Wenatchee and Yakima (Wash.)
In Canada: The Nichols Chemical Company, Limited • Montreal • Toronto • Vancouver

*Estimated American Paper Production for 1943

PARSONS
AND
WHITTEMORE
INCORPORATED

10 EAST 40TH ST.
NEW YORK CITY

WOOD PULP
PAPER

• • •

LYDDON
& COMPANY
(AMERICA) INC.

51 EAST 42ND ST.
NEW YORK CITY

EXPORTERS OF
AMERICAN PULP
TO BRITAIN, SOUTH
AMERICA AND ALL
OTHER WORLD
MARKETS

alcohol for their finished products. Government subsidies are not conducive to a continued low priced product which is the basis of the high standard of living enjoyed by the American people as compared with other countries.

As an example of American ingenuity market prices may be compared over a period for such basic materials as aluminum, magnesium and rayon yarn. The market price per pound for aluminum in 1918 was 33c; in 1929 24c; in 1935, 22c; and in 1943, 14c. For magnesium the price per pound in 1918 was $1.81; in 1928, 55c in 1935, 30c and 1943, 20½c.

For rayon yarn the price per pound in 1918 was $4.77; in 1928, $1.50; in 1935, 57c; and in 1935, 55c.

Prices of synthetic rubber will in all probability follow such a pattern which should assure it at least a partial position in the post war era, which in turn will increase the market requirements for competitive alcohol.

When it is considered that war is nothing but waste, it would seem sensible that the fullest possible use be made of waste materials, reserving to the generations to come at least some of our natural materals.

Alcohol to be produced at the Bellingham plant is to be 190 proof alcohol, entirely suitable for use in production of butadiene for rubber, explosives and all other of the many products mentioned. Daily production is expected to exceed 5000 gallons. Construction started at the end of March and, barring any unforeseen delays, the plant should be in operation this fall.

Few Uses for Lignin

● Research is steadily going on looking toward the utilization of wastes from pulp production other than for alcohol. Although the cellulose portion of the wood has been developed to a great degree, the residue consisting of over one third-of the wood, lignin, is still somewhat of a mystery. Not needed for pulp or paper making, there have been up to now few uses for lignin. Now it is being saved for use in tanning leather, as a binder in mixing concrete, as a water softener, and other varieties of uses. Vanillin, which is used in the flavoring of ice cream, can be made from lignin. It can also be used as a base for fertilizer.

However, concentrated research of this waste product was intensified soon after the beginning of the war and it was found that lignin could be used in the manufacture of palstics which are being used for bomb fuses and shell cases; in instrument panels for airplanes, ships and tanks. However, these products only use a small portion of this waste and studies are being carried out in various parts of the country looking toward the economical use of the larger quantities available. New and unexpected developments may result from such research.

The pulp and paper industry of the State of Washington is carrying out its share of such a research program, not only in its own laboratories, but it has recently entered into an agreement with the University of Washington to provide substantial sums of money over a period of five years to carry out a program of intensive research looking forward to such utilization of lignin. This program is under the able direction of Dr. Benson and his staff at the University.

New Logging Methods

● Considerable attention and publicity has been given to the amount of waste in logging operations and of the possible salvage of such waste, for use as a raw

material for pulp making purposes. Such operations are ready to proceed with such an undertaking, but in my opinion such salvage operations cannot be carried out at this time, as it is very difficult, due to demand of manpower by the armed forces, to keep full crews in the woods to log under the customary practices. This is without a doubt a postwar project when manpower is available and in the interval studies and experiments are being conducted by the companies affected as to the most economical method of salvaging this waste. That it should be salvaged is beyond question, but there also enters into the question the economical possibility of such salvage, and this will be dependent upon competitive conditions in the pulp industry.

We must not overlook the fact that pulp, being on the free list, has no tariff protection and has in the past been subjected to all kinds of unfair competition such as dumping and depreciated foreign currencies, and any reversion to conditions such as they existed during the period from 1932 to 1938 would preclude such salvage of the smaller pulpwood logs and other waste wood now left in the woods.

Such salvage operations will have to be carried on concurrently with the main logging operations as once a tree of the pulp specie is severed, whether it be large or small, it must be converted into pulp within a period of two years or it is useless for such purpose or any other purpose; therefore, such salvage operations will be in timberlands requiring long hauls and trucking these days. The success or failure of such operations will depend on the margin between costs and selling price of the product made from such salvaged wood.

It is, therefore, correct to say that industry alone will not have been responsible for the success or failure of this undertaking. Government policies as to trade agreements, tariff matters, etc., will have a great bearing on this subject and the Pacific Northwest should be keenly alive to these matters and on the alert or we will wake up some morning and find that a major part of the products of the Pacific Northwest has been the subject of trade agreements which may adversely affect, not only the possible salvage of now wasted materials, but may even endanger the successful operation of enterprises operating under present conditions.

Perhaps some of you have noted recent articles in connection with possible trade deals with Russia running into the billions of dollars wherein the fields of export to Russia considered are power plants, turbines, generators, etc., communications equipment consisting of huge quantities of telephone equipment, railroad equipment mentioning 50,000 freight cars, 3,000 locomotives, passenger cars, etc. General machinery and machine tools in very large amounts, practically all of this equipment is as you know manufactured in the industrial East. In exchange for this the Russians reportedly propose to export to this country quantities of chrome, manganese, lumber, pulpwood, precious metals and other raw materials, practically all products of the West. From the standpoint of the Pacific Northwest you can realize how important it is that we should keep in close touch with such a situation; also, that we should urge upon our senators and congressmen to see that any such agreements are not made behind closed doors, so that affected industry in the Pacific Northwest may have a chance to be heard.

Reverting for a moment back to waste in industry, one of the outstanding developments in the pulp industry during the past year is the hydraulic barking installation of the Weyerhaeuser Timber Co., at Everett, and

IT STILL TAKES WOOD TO WIN A WAR

Older than war itself, wood and the products of wood are playing an even more important role in military history today than did the famous wooden horse of Troy. Blessed with great forest lands, America is also fortunate in the men who have achieved so much with the materials that come from trees. Whether your work is lumber, fibre, paper, plywood or chemicals—your *extra* effort in setting production records is making Victory possible. You are a Citizen Soldier *on the job.*

LET'S GET ASSOCIATED

To help you keep on producing to the limit, your Associated representative can supply you with quality fuels and lubricants, for the protective maintenance of your vital equipment. More than that, he is armed with the latest facts on wartime changes and developments in petroleum products. Let his knowledge and training serve you at any time, without obligation, when your problem involves the powering, lubrication, efficiency, or condition of your tools or machines.

TIDE WATER ASSOCIATED OIL COMPANY

Cadol A. P. Heavy Duty Lubricant • Cycol Industrial Lubricants • Veedol and Tydol Motor Oils
Associated Aviation Ethyl and Flying A Gasolines
Fisk Tires • Aero Batteries

no doubt as soon as materials are available, installation of some such equipment will be made in all of the larger mills in the Pacific Northwest. This development increases the yield of pulp from a thousand feet of logs by some 15 to 18% and has the effect of saving the total annual cut of timber by pulp mills of over a billion feet, every sixth year.

Industry realizes that it has a tremendous job ahead of it to provide jobs for the returning soldiers and the many others released from war jobs, but with every application and the help of scientific research, sound government policies and cooperation between labor and industry, the Pacific Northwest should go forward toward a great development of its vast resources.

West Coast Representative wanted by Middle West manufacturer of paper and pulp mill equipment specialties. Good opportunity for man who is established and wants an additional line. Give age, lines handled and present territory covered when replying. Address Box 9, Pacific Pulp & Paper Industry, 71 Columbia St., Seattle 4, Wash.

Trade Talk

of Those Who Sell Paper

N. Y. Paper Man Dies

● Pacific Coast friends of Quincy P. Emery, who was a department head in the Seattle division, Zellerbach Paper Co., many years ago, will be grieved to learn of his death July 20 in New York.

Mr. Emery had been in the wholesale paper business in New York for a long time.

Tal Padre, Tal Hijo

● Right in his father's footsteps is Walter R. McWaters, newly appointed manager of the Portland division of the Zellerbach Paper Co. When W. D. McWaters, manager of the Portland division for the past 31 years, retired, his son was appointed to fill the vacancy.

Walter will continue to receive his father's sage advice, however, for McWaters Sr. will not sever his ties with the company but will continue in an advisory capacity.

"It's up to you!" ANSEL A. ERNST (right), president, Paper Mill Men's Club, Los Angeles, is saying to GERRY N. MADIGAN, general chairman of the association's annual Hi-Jinks, scheduled for Friday, Sept. 29. The affair is always one of the entertainment features of the pulp and paper industry in Southern California, and raises funds for underprivileged children.

IT COST 50 CENTS PER HEAD to see this "feud-settling" gin rummy contest. BERT NEUMANN (left), San Francisco sales manager, Zellerbach Paper Co., and HAROLD ZELLERBACH (who has just ginned), President of the firm, were the contestants. ED STEIGER (at end of table facing camera) was referee.

The receipts were sufficient to buy three war bonds, which were raffled off to ticket holders.

Shelburne Resigns

● Jack Shelburne, with Zellerbach Paper Co. for the past 18 years, has resigned to go into the stationery business for himself in Fresno, Calif. He was head of the resale department of the Zellerbach-Fresno division.

Joe Shahan Moves

● Joe Shahan, president of the Shahan Paper Co., San Francisco, has moved his headquarters from 244 Fremont St., to 502 Minnesota St., where spur track and ample storage facilities will be available.

West Va. P. & P. Official

● D. D. Miller, Pacific Coast manager of the West Virginia Pulp & Paper Co., San Francisco, suffered a severe break in his arm in an accidental fall at his home, and will be away from his desk for a number of weeks.

Embree Sells Interest In Firm to Chapman

● Leo P. Chapman has become principal owner of Carter Rice & Co. of Washington, wholesale paper business in Seattle.

His partner, Earl E. Embree, who had been in paper business in Seattle for 34 years, recently sold out his half-interest to Mr. Chapman and his associates and went to Los Angeles to join the U. S. War Production Board priorities division there.

Week Wins Air Medal

● First Lt. John N. Week, USAAF, formerly a Blake, Moffitt & Town employee, was a recent visitor at San Francisco headquarters of the company.

Jack and his crew saw plenty of action flying the Willie Jr., a member of the oldest medium bomber group in the Mediterranean area. Lt. Week holds the Air medal with three Oak Leaf Clusters.

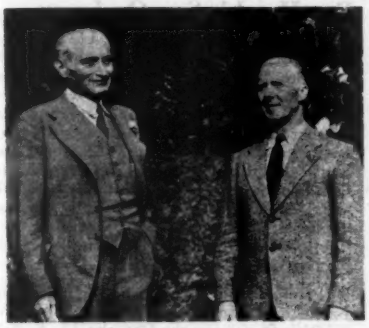
Churchill In Navy

● Kenneth M Churchill, former "top" salesman with Blake, Moffitt & Towne, has been commissioned as Lt. (jg) in the Naval Reserve. He graduated from the University of California, where he was an outstanding student and track athlete, having competed in Olympic Games.

Blake, Moffitt & Towne Handles WHIZ Line

● Blake, Moffitt & Towne, pioneer wholesale distributors on the Pacific Coast, with headquarters in San Francisco, are now distributing the WHIZ industrial products line manufactured by R. M. Hollingshead Corp., Camden, N. J. The WHIZ line includes more than 50 industrial maintenance products.

Founded in San Francisco in 1855, Blake, Moffitt & Towne distributes a complete line of printing, wrapping and other types of paper, as well as such allied lines as soaps, sanitary supplies, twines and cordage.



DR. M. M. ROSTEN (left), refugee owner of Kutno Chemical Works in Poland and builder of more than 50 alcohol plants in Europe, is shown here on a recent visit to Powell River Co.'s mill in British Columbia with M. H. JONES (right), engineer of Ontario Paper Co.

Dr. ROSTEN, who designed and started the alcohol plant built last year at Ontario Paper Co., Thorold, Ont., made a survey of possibilities of using Powell River's sulphite mill effluent for alcohol manufacture. Mr. Jones and Mr. W. K. Voss, operating officials of the Thorold alcohol plant, accompanied him.

Lignin Expert At Camas

● The Central Technical Department, Crown Zellerbach Corp., Camas, Wash., received a visit from Dr. Bruce Mead, Ontario Research Foundation, Toronto, Canada, on July 24 and 25.

The organization which Dr. Mead represents was set up with the sanction, and under the direction, of the Ontario Provincial government to provide facilities and research personnel for pulp and paper problems which are referred to it by companies situated within the province.

Dr. Mead is associated with others in studying the lignin phase of wood utilization.

Dr. Mead visited his parents in Tacoma, Wash.

Defieux and Mullineaux Promoted At Camas

● Shifts in engineering department personnel at Crown Zellerbach Corp.'s Camas, Wash., mill, effective July 1, have been announced by J. E. Hanny, resident manager, as a result of the resignation of I. C. Shotwell, plant engineer.

● O. T. Defieux, former steam plant superintendent, has taken over the duties of plant engineer. L. R. Mullineaux, who was assistant to Mr. Defieux, has been made steam plant superintendent, and Ed Cooley, former assistant to Mr. Shotwell, has been named mechanical superintendent of maintenance and construction.

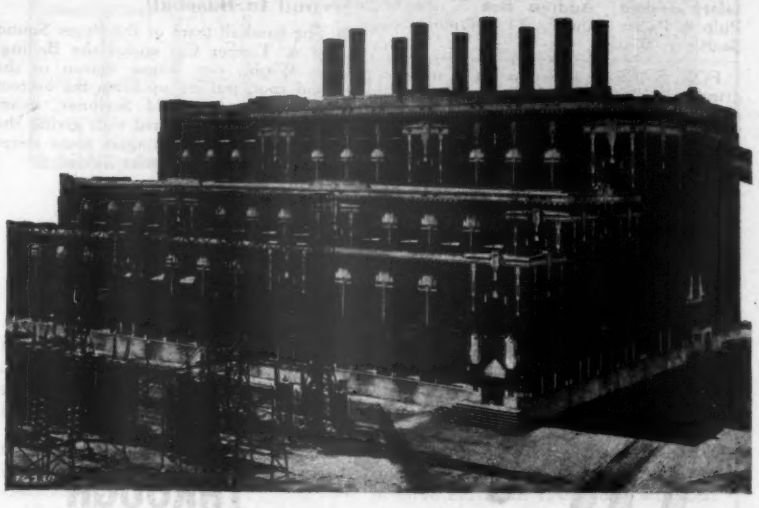
To Centralize Operations

● Provision is being made for a centralization of some of the departmental operations of Pacific Mills, Ltd., at Vancouver, B. C.

The purchasing staff now quartered in the factory building will be transferred shortly to the head office building, and the accounting department headed by George Hodson, comptroller, will be moved from Ocean Falls to the head office in Vancouver, too.

New accommodation is being provided for the forestry department now being organized by Hugh Hodgins.

For the modern
POWER PLANT



Buell (van Tongeren)
Dust Recovery Systems

● THIS POWER PLANT has a total generating capacity of 111,000 KW, including 37,500 KW from a new turbo generator served by a 400,000-lb.-per-hr. Combustion Engineering boiler. The boiler, fired with pulverized coal, develops steam at 875-lb. pressure and 900° F.

The 32 Buell (van Tongeren) cyclone flue dust collectors installed with this new boiler have proven satisfactory under actual operating conditions, giving high collection efficiency and requiring no maintenance during the two years they have been in operation.

Power plant engineers are invited to write for the interesting, illustrated book— "The Buell (van Tongeren) System of Industrial Dust Recovery." Ask for Bulletin G-842.

BUELL ENGINEERING COMPANY, INC.
70 Pine Street, New York 5, N. Y.
Sales Representatives in Principal Cities

buell
DUST RECOVERY SYSTEMS

DESIGNED TO DO A JOB, NOT JUST TO MEET A "SPEC"

WANTED: For Mexico, paper mill executive to manage modern Kraft pulp and paper mill with ground wood department. Must have general knowledge of mill operation and maintenance of mechanical and electrical equipment. Knowledge of Spanish advantageous but not essential. Very healthful location. Splendid opportunity with great future for the qualified man. Applications will be handled confidentially if so desired. State salary desired. Address Box 7, Pacific Pulp & Paper Industry, 71 Columbia St., Seattle 4, Wash.

FOR SALE — 1 4-pocket Carthage grinder with 1,000 H.P. synchronous motor, 3 phase, 60 cycle, 2200 volts. Starting equipment. Good shape. SHARTLE BROTHERS MACHINE CO., Middletown, Ohio.

WANTED: ENGINEERING DRAFTSMEN—For design and development of insulation board mill equipment and allied machinery. Permanent position. Experience in design of paper mil equipment helpful but not required. Location South. State draft status and availability with complete details of experience. Reply Box 8, Pacific Pulp & Paper Industry, 31 Columbia St., Seattle 4, Wash.

Second In Baseball

● The baseball team of the Puget Sound Pulp & Timber Co. ended the Bellingham, Wash., city league season in the second spot, pulling up from the bottom after a slow start. Ed Scribner, steam plant fireman, is credited with giving the rest of the league managers some sleepless nights by the team he fielded.

APPROVED
THROUGH
SATISFACTORY SERVICE

● Now available to meet the needs of all industry is Synthetic Rubber belting, hose and packing and other mechanical rubber goods. Research at Pioneer is on a continuous basis. Compounds of Synthetic Rubber that after less than two years of intensive development compare favorably with, and in many cases excel natural rubber in service, are now available. In addition to hundreds of Synthetic Rubber compounds already proven, new developments within the past few months include:

No. 00393—Steam Hose Tube.
No. 48400—Age-Resisting Fire Hose Lining.
No. 03850—Splicing Material for Transmission Belting.
No. 03920—Non-Soiling Conveyor Belt Cover.
No. 38200—Super-Tough Belt Cover Compound.
No. 00296—Oil Hose Lining.
No. 04820—Soft Gasket Material.
No. 26900—Ultra-Soft Press Die Pad.
No. 07600—Soft Roll Covering Stock.

These compounds are being offered today; others are undergoing development daily. Almost every need can be met with the synthetic that's best suited for the individual job.

322 Occidental Ave., Seattle, 14, Wash.
1010 "A" Street, Tacoma, Wash.
400 S.W. First Ave., Portland, Or.

PIONEER RUBBER MILLS
Sacramento St., San Francisco, 11, Cal.

633B

PIONEER
Job Tailored BELTING • HOSE • PACKING

Ray Hatch's Son On Leave

● Lieut (j.g.) Frank Hatch, U. S. Navy Air Odrnance Department, has lately been in Longview, Wash., visiting his parents, Raymond Hatch, research director, Pulp Division, Weyerhaeuser Timber Co., and Mrs. Hatch. Lieutenant Hatch returned to the U. S. from the South Pacific where he saw action at Guadalcanal and in other theatres of war. After his leave he reported to the Oakland air base for reassignment.

Promoted to Major

● Promotion from captain to major of John G. Hoffman, Jr., chemical warfare service officer attached to the U. S. 5th Army, was recently announced in Italy. He won the French Croix de Guerre and Purple Star for "bravery under fire" while serving with French units.

Maj. Hoffman was in business in Portland, Ore., in the firm, Drew & Hoffman, chemical engineers, until both partners entered the service.

Minister Seeks Pulp

● Hon. J. A. Beasley, minister of supply for the commonwealth of Australia, was a recent visitor to Vancouver. He said he was primarily interested in making arrangements for a continuing supply of pulp from British Columbia.

Hooker Gets 3rd Star

● Hooker Electrochemical Co. of Niagara Falls, N. Y., has been awarded a third star for their Army-Navy "E" flag, in recognition of their continued excellence in the production of materials for the U. S. Army. This award was used as a stimulus to promote the success of the Fifth War Loan Drive, and in connection with these activities an exhibit of Hooker chemicals and industrial products and the part they are playing in the war effort was erected on the company plaza.

Golfers Are Good at P. S.

● Lee Angell, Jr., drying room employe of the Puget Sound Pulp & Timber Co., is now the golf champion of Whatcom County in Washington. He comes of a sports-minded family, his father being a former big league baseball player; now a member of the Puget Sound staff as a pulp mill grader.

Mrs. Erik Ekholm, wife of the general superintendent, Erik Ekholm, held the women's county title for several years.

Fitch's Sons In Air Corps

● Mr. James I. Fitch. machine tender at Puget Sound Pulp & Timber Co., and former superintendent of the Cascade Paper Company at West Tacoma, Wash.. has two sons in the U. S. Army Air Corps. Lieut. Ed Fitch pilots a two-engined bomber in France. A younger brother, Charles, is in training in Sacramento, Calif.

Allez' Son Gets DFC

● Fred Allez, machine tender for the Puget Sound Pulp & Timber Co. of Bellingham, Wash., learned that his son, Fred Allez, Jr., has received the Distinguished Flying Cross for action over Germany. His plane was one of a squadron which met fierce enemy opposition with over sixty planes being lost in the action. Young Allez was credited with saving his ship by personal effort beyond ordinary duty.

Longview Fibre Leads State; Buys $1,000,000 in Bonds

● Employes of the Longview Fibre Company have been declared by the Treasury Department and by Bond Campaign officials as first among firms of comparable size in Washington state in bond purchases through payroll deduction. Since October, 1942, employes have participated 100 per cent, have maintained more than a 10 per cent gross payroll deduction, and have bought a total of $1,068,800 maturity value in bonds, going over the top in every war loan drive.

The bond sales campaign is directed by a planning committee composed of Boyd Wickwire, personnel manager; Eugene Eby, president of Local 268, International Brotherhood of Papermakers; and Frank Piper, president of Local 123, International Brotherhood of Pulp, Sulphite and Paper Mill Workers.

U. S. Pulp Mills Pay $207,000,000 For Wood

● Industrial estimates indicate that U. S. pulpwood consuming mills paid about $192,000,000 for 13,000,000 cords (7,280,000,000 ft.) of domestically produced pulpwood last year and probably will pay close to $207,000,000 for 14,000,000 cords (7,840,000,000 ft.) this year. While no accurate figures are available on the proportion of this pulpwood that will come from farm woodlands, a conservative estimate is 35 per cent. That would mean that about $67,000,000 was paid for farm pulpwood in 1943 and at least $72,500,000 will be expended by mills for farm-produced pulpwood this year if the War Production Board's goal is reached.

Even before the war 38 per cent of the nation's pulpwood came from farm woodlands, and in the South the proportion was 55 per cent. Authorities agree that the percentage of pulpwood coming off of farm woodlands has increased since Pearl Harbor.

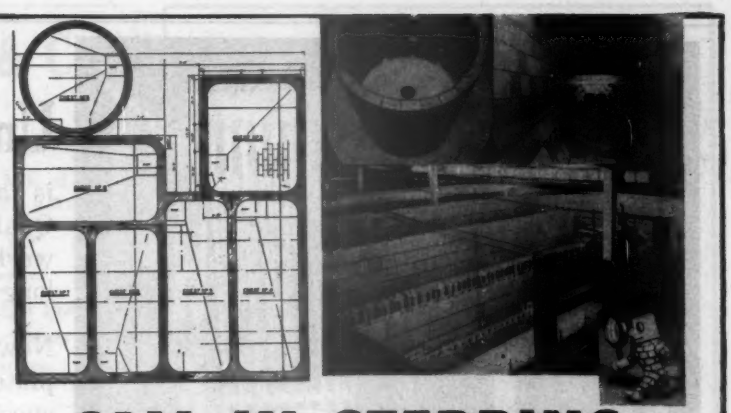
At the outset of the Victory Pulpwood Campaign the War Food Administration estimated that three and a half million farms in this country have marketable forest products. In some sections of the country woodlands may represent half of a farmer's acreage. In South Atlantic states, for example, the average farm woodland comprises 40 acres. In New England it is 53 acres, while in the South Central states the average is 42 acres.

Foxboro's Second Star

● In a letter appropriately dated July 4, Admiral C. C. Bloch, USN (Ret.), Chairman of the Navy Board for Poduction Awards, has informed The Foxboro Company, Foxboro, Mass., of its second renewal of the Army-Navy "E" award "for meritorius service on the production front." The Foxboro Company manufactures industrial instruments for process measurement and control.

Fish Stories At Puget Sound

● Some tall fish stories are being circulated around the Puget Sound Pulp & Timber Co. these days. Virgil Gerrv, machine tender, spent a few days in the San Juans, and his catches included a 26-pound salmon. Sid Collier. assistant superintendent, returned from Mill Bay on Vancouver Island, and gleefully told of getting all the grilse and cohoes he wanted.



CALL IN STEBBINS

for Stock Tanks and Chests that fit into rehabilitation and modernization programs

For sixty years, Stebbins have worked closely with pulp and paper mill operators, solving lining and tank problems peculiar to the industry.

Stebbins designers are thoroughly familiar with the chemical and mechanical requirements of the various processes involved.

All materials of construction are made by others to meet STEBBINS specifications based on sixty years of experience and hundreds of successful installations.

Stebbins erectors sent to do the actual installation know their way about a pulp or paper mill, leaving your own men to carry on their jobs without constant interruption.

SEMCO

Stebbins Engineering Corporation

TEXTILE TOWER SEATTLE, WASHINGTON

General Electric Publishes Gas Turbine Information

● General Electric engineers have prepared two technical publications on gas turbines on relationships of thermodynamics, pressure and temperature, operating characteristics, fuel economy and applications.

These books are free. Write for publication GED 1099—"The Basic Gas Turbine Plant and Some of Its Variants," by J. Kenneth Salisbury; and publication GED 1090 — "The Gas Turbines and Turbosuperchargers," by Dr. Sanford A. Moss. Address requests to General Electric Co., 235 Montgomery St., San Francisco.

Perfection Twine Adds New Twister Machine

● Perfection Twine & Bag Co., Camas, Wash., has added a heavy twine twister machine to its installations. The new machine is made by Brownell of Worcester, Mass., and is exactly the same, except for some modern improvements, as another machine now operating in the plant. The new installation is an eight-spindle twine maker and is repalcing a worn out two-spindle machine, so that additional factory space was unnecessary. Capacity will be increased by 40 percent.

Perfection Twine is now employing 40 men and women operating three shifts of 48 hours each per week, and 90 percent of production is for war purposes.

President of the company is Emerly Thompson, now a lieutenant (j.g.) in the U. S. Navy. Howard M Wall, Portland, Ore., is vice president and secretary. Curtis E Sawyer is plant manager.

E. D. Jones & Co. Honor Henry Williams and D. E. Jones

● The directors of E. D. Jones & Sons Co., at a recent annual meeting, elected Henry H. Williams vice president in charge of sales, and Dwight E. Jones, vice president in charge of engineering and manufacturing.

The appointments, the company reports, are in recognition of notable contributions made by these officers to the progress of the company.

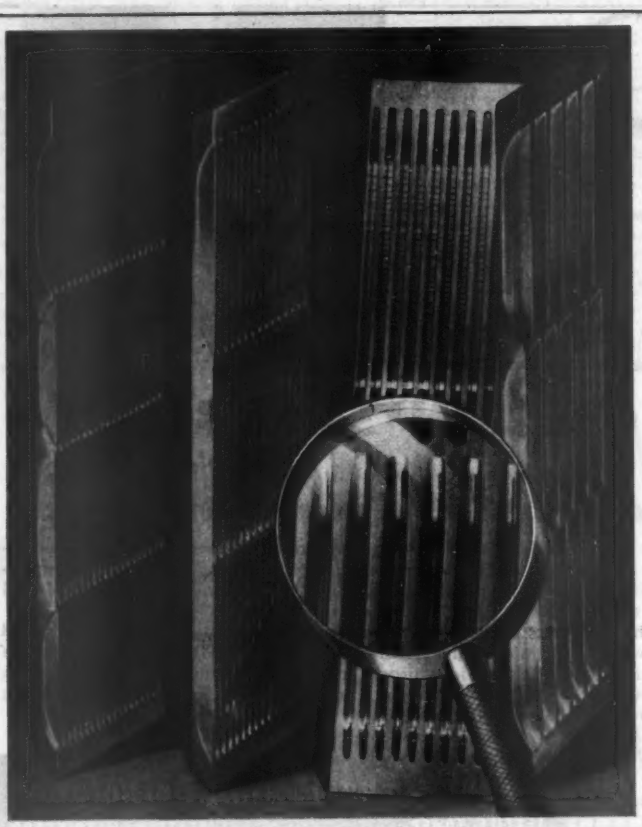
Barrett On Coast

E. E. Barrett, vice-president of G. F. Steele & Co., Inc., New York, sales representatives for Powell River Co. and several other large Canadian producers of newsprint, paid his first visit to the Pacific coast in 12 years recently.

In Vancouver, B. C., Mr. Barrett visited the Powell River Co. offices and later the company's pulp and paper mill. Subsequently he went down to Santa Ana to visit his son, hospitalized after service in the South Pacific.

Anacortes' First Picnic

● Herman L. Hansen, resident manager, and Jess R. Lewis, superintendent, made short talks to employes of Coos Bay Pulp Corp. of Anacortes, Wash., when that mill held its first picnic at nearby Sunrise Park July 23. Free ice cream and coffee were dispensed and all kinds of games, from a women's nail-driving contest to a pie-eating "battle," were held.



The metal in

Union Screen Plates

is always of uniform analysis. Quality of metal and accuracy of workmanship insures uniformly long service.

New catalogs with complete screen plate data are available upon request.

+

Manufactured by

UNION SCREEN PLATE COMPANY
FITCHBURG, MASS.

+

Represented by

PACIFIC COAST SUPPLY COMPANY
PORTLAND SAN FRANCISCO

Crown Zellerbach Corp. Sets New High Sales Record

● Crown Zellerbach Corp. reports for the fiscal year ended April 30 the highest dollar volume of consolidated net sales in its history and a small improvement in net income. Sales totaled $97,833,812, compared with $84,656,362 the year before. Part of this gain, it is noted, resulted from increased volume of no-profit war work, and part from increased sales in purchased products. Production for the year was actualy down to 623,829 tons from 637,620 tons a year before.

Consolidated net profit totaled $7,603,441, equal after preferred stock dividends to $2.19 a common share. This compares with $7,543,287, or $2.16 a common share, for the preceding fiscal year.

During the year the company's debt to banks was reduced by $1,000,000 to $2,500,000 as of April 30. In May this debt was further reduced to $1,500,00, which carries interest at the rate of 2¼ per cent a year and is due in 1946 and 1947.

Soundview Co. Report

With lower production and sales, net profit of Soundview Pulp Company, Everet, Wash., declined to $222,281, equal to 36 cents a share, in the four months ended April 20, from $300,782, or 53 cents per share, in the 1943 period.

Finnish-Russian Terms

Reliable reports reached this country that peace terms offered to Finland by Russia included the proposed payment of $600,000,000 in reparations over five years, payable in paper, pulp, machinery, etc.

P.U.D. means Put Up Dough!

Since 1938, including 1944 levies, Public Utility Districts will have **collected** nearly **$1,500,000** taxes from people in the general area served by Puget Power while we will have **paid** taxes of about **$18,000,000.** With PUDs you lose two ways: PUDs **increase** your **tax bill** and your **electric bill!**

PUGET SOUND POWER & LIGHT COMPANY
FRANK McLAUGHLIN, President
Owned and Operated the American Way
★ BUY WAR BONDS FOR VICTORY ★

Hardy S. Ferguson & Co.

Consulting Engineers

200 Fifth Avenue, NEW YORK 10, NEW YORK

Hardy S. Ferguson—Member A.S.C.E., A.S.M.E., E.I.C.
Moses H. Teaze—Member A.S.M.E., E.I.C., A.S.C.E.

Consultation, reports, valuations, and complete designs and engineering supervision for the construction and equipment of

Pulp and Paper Mills and other Industrial Plants.
Steam and Hydro-electric Power Plants
Dams and other Hydraulic Structures.

R. E. CHASE & CO.

TACOMA BLDG., TACOMA, 2
PHONE MAIN 4281
BRANCHES IN
SEATTLE & PORTLAND

EQUIPMENT FOR . . .
CHEMICAL ENGINEERING
STEAM POWER GENERATION
DUST CONTROL

ARTHUR J. NORTON

Consulting Chemist

Resins, Plastics and Chemical Research Development

2919 First Ave. So. Seattle, Wash.

GEORGE F. HARDY

Consulting Engineer to the Paper Industry Since 1900

305 Broadway, New York 7, N. Y.

Member—Am. Soc. C. E.—Am. Soc. M. E.—Eng. Inst. Can.

Consultation—Reports—Valuations—Estimates. Paper and Pulp Mills—Hydro-Electric and Steam Power Plants—Plans and Specifications.

PULPWOOD CLEANING MACHINES
★ ★ ★ BARKERS ★ ★ ★
KNOT BORING and ROUTING MACHINES
CONCAVE KNIFE AND BROUTING BIT GRINDERS
★ ★ ★
STETSON-ROSS MACHINE CO.
SEATTLE, WASHINGTON

PULP—PAPER

PERKINS-GOODWIN COMPANY

Established 1846

30 Rockefeller Plaza, NEW YORK, 20

Suite 3605

O. C. SCHOENWERK

Consulting Engineer

3240 LAKE SHORE DRIVE
CHICAGO, ILLINOIS

Pulp and Paper Mill Design — Construction

Marshall and Barr

Consulting Industrial ENGINEERS

Consultation, Design, Specifications, Production and Management Problems

HARRY L. MARSHALL CHARLES M. BARR

Lloyd Building, Seattle 1, Washington

PROPERTY OF THE SEATTLE PUBLIC LIBRARY

Producers of

SULPHUR

Large stocks carried at all times, permitting prompt shipments . . . Uniformly high purity of 99½% or better . . . Free of arsenic, selenium and tellurium.

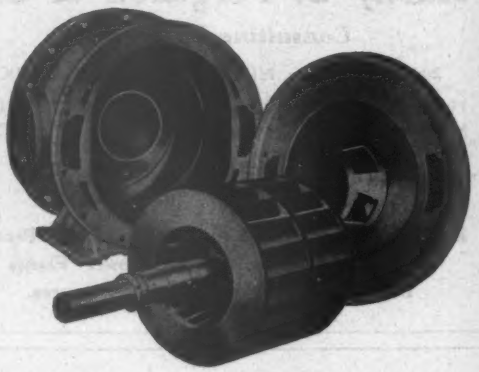
TEXAS GULF SULPHUR CO. Inc.
75 E. 45th Street New York 17, N.Y.
Mine: Newgulf, Texas

WOMEN OPERATE CAMACHINES TOO.

When one of the paper mills at Kaukauna, Wisc., hired women to operate their fast running CAMACHINE 10-6, the changeover was easily made. The women "caught on" quickly, because of the simple operating features built into the CAMACHINE. If you are short of male help—and who isn't—take a tip from them. Keep up your wartime production with CAMACHINES operated by women.

CAMERON MACHINE COMPANY, 61 Poplar Street, Brooklyn 2, New York
MIDWEST OFFICE: Harris Trust Building, 111 West Monroe Street, Chicago 3

SIMPLICITY



NASH VACUUM PUMPS HAVE ONE MOVING PART

Operating advantages made possible by the Nash principle, and present in no other type of vacuum pump, permit a new level of operating economy. Nash Vacuum Pumps have but one moving part, a rotor cast in one piece, and revolving without metallic contact. There are no valves, no pistons or sliding vanes, no internal parts requiring wear adjustment or lubrication.

NASH ENGINEERING COMPANY
SOUTH NORWALK, CONNECTICUT, U. S. A.

INDEX OF ADVERTISERS

A
Alaskan Copper Works 62
American Potash & Chemical Corporation 59
Appleton Machine Co. 4
Appleton Wire Works 62
Appleton Woolen Mills 61
B
Bagley & Sewall Co. 62
Black Clawson Co., Divisions: Shartle Bros. Machine Co., Dilts Machine Works 3
Buell Engineering Co., Inc. 53
Bulkley, Dunton Pulp Co. 1
C
Cameron Machine Co. 64
Chase & Co., R. E. 63
Chromium Corporation of America 62
Combustion Engineering Co., Inc. 34
E
Eastwood-Nealley Corporation 56
Edison Storage Battery Co. 61
Electric Steel Foundry Co. 45
F
Ferguson & Co., Hardy S. 63
Fitchburg Screen Plate Co., Inc. 58
Foxboro Co., The ..... Inside Back Cover
Freeport Sulphur Co. 61
G
General Chemical Co. 49
General Dyestuff Corporation ..... Insert
General Electric Co. ..... 46 and 47
Great Western Division, The Dow Chemical Co. 37
H
Hardy, George F. 63
Hesse-Ersted Iron Works 60
Hooker Electrochemical Co. 39
I
Instrument Laboratory, Inc. 62
J
Johnson Corporation, The 62
Jones & Sons Co., E. D. 43
K
Lyddon & Company, Inc. 50
M
Marshall & Barr 63
McMaster, Leonard 61
Merrick Scale Manufacturing Co. 62
N
Nash Engineering Co. 64
National Aniline Division, Allied Chemical & Dye Corp. 57
Northwest Filter Co. 62
Norton, Arthur J. 63
O
Orr Felt & Blanket Company 58
P
Pacific Coast Supply Co. 56
Pacific Gear Works ..... Outside Back Cover
Pacific Gear & Tool Works ..... Outside Back Cover
Pennsylvania Salt Mfg. Co. of Washington ..... Inside Front Cover
Perkins-Goodwin Co. 63
Pioneer Rubber Mills 54
Puget Sound Power & Light Co. 56
Pulp Bleaching Co. 62
Pusey & Jones Corporation 62
R
Rayonier Incorporated ..... Insert
Ross Engineering Corporation, J. O. 62
S
Schoenwerk, O. C. 63
Shuler & Benninghofen 57
Simonds Saw and Steel Co. 59
Smythe, Ray 61
Soundview Pulp Co. 2
Standard Oil Co. of California 41
Stebbins Engineering Corp. 55
Stetson-Ross Machine Co. 63
T
Texas Gulf Sulphur Co. 64
Tide Water Associated Oil Co. 51
W
Waterbury & Sons Co., H. 62
Wauna Lumber Co. 60
Western Gear Works ..... Outside Back Cover
Western Precipitation Corp. 60
Weyerhaeuser Timber Co., Pulp Division 62